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Medical Care for Dependents of Men in Military Service*

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GUARDING the health of the families of men in the armed forces becomes a very real problem as our nation swings into the full war effort. When men by the millions are moved about the face of the globe, many problems are left behind. One of these is securing adequate medical care for dependents at home. Maternity care becomes a vital concern of the men in service as well as of their wives from whom they are so often separated. The economic adjustments made necessary in wartime in hundreds of thousands of homes raise the question as to whether good care will be available to the expectant mother.

Realizing these facts, far-sighted advisory groups have for several years assisted in making plans for just such an eventuality as now confronts us. To provide care for women during childbearing and to assist in taking care of their sick infants, the Children's Bureau in the spring of 1942 set aside certain funds. These were specifically designated to be used to insure adequate medical and, when necessary, hospital care in soldiers' families when such attention was not otherwise available. The responsibility for administering this program was delegated to the various state health agencies already conducting maternal and child health programs. Less than $200,000 was available when the Children's Bureau brought the matter to the attention of the several states. By October, 1942, requests for funds had been submitted from 26 states. These were approved and represented funds totalling $308,000 to meet the immediate needs.

At first there could be no definite idea as to the probable extent of the need. Experience to date suggests that there will be a steady increase in the demand for these services. This will probably continue for the duration of the war and for a short period thereafter. Surveys had indicated that in an American army of five million men, 20 per cent would be married and that 5 per cent of all babies born in the year beginning July 1, 1942, would

* Based on paper presented before the Maternal and Child Health Section of the American Public Health Association at the Seventy-first Annual Meeting in St. Louis, Mo., October 30, 1942.

have fathers in the armed services. It is thought that in another year the figure would be nearer to 10 per cent. At present more than 400 babies are being born each day of soldier-fathers. As had been predicted, the wives of soldiers began to seek assistance for maternity care through various agencies by the spring and summer of 1942. The Red Cross surveys indicate that probably more than 25,000 wives of servicemen are seeking obstetric and pediatric care each month.

By December 1, 1942, requests from the health agencies of 39 states for funds to care for servicemen's dependents totalled over $2,250,000. This was the estimated amount necessary to complete the program during the current fiscal year.

A deficiency act has now been approved by Congress and signed by the President carrying $1,200,000 to meet the emergency. This action of the Congress is for an emergency period which is defined as the duration of the present war and 6 months thereafter. An appropriation of at least $6,000,000 will be sought annually to provide for the continuation of these special types of care in the families of certain groups of men in military service.

New Mexico had a plan approved early in July, 1942, and the first applications were received August 1 of that year. Any new program in public health is always interesting. Like the ever popular jig-saw puzzle, the many parts of this new plan were well scattered and had to be brought together. There was no assurance as to just what the final picture would be. There are at least three fixed factors to serve as guides: the amount of money available, the time limits placed upon its expenditure, and the estimated need for the service. The first two of these are very definite, the last is still a matter of guess work.

Other parts of the puzzle that have to be considered are the personnel to be used, the hospitals available, the standards of care, the extent of the services, the machinery to make the plan operate effectively, suitable record forms, an accounting system, and, finally, the question of what to do with the hundreds of variants that arise once the program is under way.

From the start, the situation in New Mexico presented one problem after another which had to be adjusted. The approved plan represented a sincere attempt to provide the care in the manner intended. Before the program had been in operation three months, numerous alterations were necessary. Changes had to be made in order that the underlying principles desired by the sponsors could be carried out. Unexpected difficulties in the actual operation of the plan are still being encountered.

Since the application of the national program to New Mexico is being described in this paper, it is necessary that a brief picture of the state be presented. New Mexico is famous for its scenery and climate. Chambers of Commerce make much of this, and rightly so, but New Mexico is also a land of social problems which are very different from those of Ohio, Alabama, or Maine. Just a few of the factors which influence the approach to any health problem may well be mentioned. With a population of only 550,000 scattered over the fourth largest of these United States, it is easily seen that problems of communication are real and social handicaps numerous. In addition, there is the racial and language difficulty. In some counties the Spanish speaking portion of the population is above 90 per cent. The fact that a vast majority of families are living at a low income level, further complicates attempts to render health and welfare services.

Many of these factors account, in part at least, for the unenviable health

reputation which the state has earned. Infant mortality, here as elsewhere, is a good index in estimating health conditions. From 1930, when the rate for the state was 145, there has been a drop to 93.7 in 1941. Maternal mortality rates are well above the average for the whole country.

These facts are presented to show that there is a constant need in New Mexico to supervise and assist those who, for economic reasons, will not secure adequate medical care unless such assistance is literally placed in their way. This is true in many of the soldier homes in New Mexico.

New Mexico is not humming with defense or war activity as are many other states. A total of fifteen areas busily engaged in war activity are found in the state, these being principally air bases and mining areas. The soldier population is relatively small compared with other sections of the country, but it is large in proportion to the number of civilians, and this soldier population is steadily increasing. We already have, scattered throughout the vast area of our state, the families of more than 2,000 New Mexico soldiers who were at Bataan or on Corregidor.

The families of men in the service can be divided into two groups: the old-time residents who have stayed in remote and often isolated regions, and another group which is made up of new residents who have come to New Mexico to live near their men in the camps and have stayed in the larger population centers when their men have been sent away for foreign duty. Both of these groups need assistance from the plan under discussion. Each group presents a somewhat different problem.

WHAT THE PLAN OFFERS

The plan for the care of wives and children of men in the armed services, as it is operating in New Mexico, is, very briefly, as follows: Maternity service including prenatal, delivery, and postpartum care is provided in either a hospital or the patient's home. The care given is by a doctor of medicine of the patient's choice. This service also includes the care of the new-born infant. At least five prenatal visits are required, and the service terminates only when mother and baby have been examined 6 weeks after the delivery. When complications or abnormalities arise in the course of maternity care, consultation is available and any reasonable amount of indicated special care can be authorized. Care of infants under 1 year of age, for any illness, is also provided, and can be secured from an approved doctor of medicine in his office, the patient's home, or at an acceptable hospital.

In both types of service the choice by the family of an attending physician is assured with very few restrictions. It is impossible in New Mexico to use specialists in other than a few locations. However, if in some parts of the state, physicians with somewhat inferior training have to be used, such service is definitely preferable to maternity care by a midwife or untrained person. A recent poll of the physicians in New Mexico showed a ratio of 1 doctor (M.D.) who can be used in the program under consideration to approximately 3,000 of the population.

Among the expectant mothers in the families long resident in New Mexico, care by midwives at the time of confinement is all too prevalent and years of teaching are only now being rewarded by an increase in the percentage of cases delivered by physicians.

Those women who have come into the state recently, and who are eligible for service under the plan to care for soldiers' wives, have probably come from sections of the country where they could obtain good obstetrical care. If they reside near army camps close to

the cities or small towns in New Mexico, they will find facilities for a very satisfactory type of professional service and hospital care.

MAKING APPLICATION

Any woman desiring service for herself or her sick infant may make application. A form is signed by the mother stating that her husband or the father of the sick infant is in the service of the United States. The service at first was offered to the families of men in all branches of the military forces below the rank of a commissioned officer, regardless of the financial status of the family. Funds now available by the recent action of Congress place a limitation upon the expenditure in that it applies only to the four lower grades in the various armed services. Applicants who qualify otherwise are refused only when it can be established that satisfactory service is available to them from other sources.

When a physician has been selected by the applicant, the forms are completed and signed by the applicant and the physician, both of whom agree to abide by the conditions of the State Department of Public Health plan. If all conditions are met, the service is authorized by the Director of Maternal and Child Health.

FEES PAID

Approved physicians and hospitals agree to accept the care of the case at the fee stipulated by the state agency and to make no further charge against the patient or her family. The fee for complete maternity care is $35. Allowance is made for any unusual condition that may arise.

When hospital care is indicated, the hospital chosen by mutual consent of the patient and attending physician must be one that is acceptable to the State Department of Public Health. An agreement to provide satisfactory care at stipulated rates is made with each hospital before approval is granted to participate in the plan.

The rate paid to hospitals for obstetrical care is $40 for 10 days' complete care at ward level. Allowances are made for "extras" in connection with abnormal deliveries. The payment for these additional items is made by agreement as the situation arises. Care of sick infants is paid for at an agreed rate per day which differs somewhat in various hospitals, the average being $2.50 a day.

There is no reason to be proud of the type of hospital which it is necessary for patients to use in some parts of our state. On the other hand, a number of very satisfactory small hospitals, equipped for ordinary emergencies, are serving residents in isolated areas of the state. Recently a patient had to be brought to the nearest hospital, a distance of a hundred miles, a week in advance of the expected date of confinement. One good rain could have made the only road impassable for several days. At the hospital in question, excellent care was provided by a competent obstetrician.

The question has been raised as to the possible preference for home delivery in some cases in view of the fact that delivery at home might prove as safe as in the hospital. In answer, it can be said that use of a hospital is made practically mandatory in view of the fact that many physicians refuse to deliver any patients outside of the hospital. The plan permits payment for home delivery where physician and patient request it.

When service has been authorized, notice is sent to the attending physician, the hospital, the mother, the local health unit, as well as any referring agency.

FOLLOW-UP SERVICES

All of these notifications are made

for obvious reasons, but it might be pointed out that the contact with the public health unit is to give the nurses an opportunity to become acquainted with the patients as early in pregnancy as possible. A great deal of assistance can be offered in some cases. Patient's with an anxiety complex can be assured of the friendly services these nurses offer.

The nurses help in adjusting problems of many kinds: interpreting physicians' orders, checking attendance at prenatal examinations, adjustment of possible household problems involving outside help or housekeeper service, guidance where financial problems have become acute, preparation of layettes, arrangements for hospitalization, and, probably most important of all, making the home visits which help to guard against preventable complications.

After the patient's return from the hospital, the nurse's visits are much more effective if the contact with the patient has been a prenatal one. Her invitation to have the mother take advantage of well child clinics will probably result in helping to keep the new-born baby well.

At the termination of a case, or when the postpartum examination of mother and infant has taken place, the maternity record form is completed by the physician and returned to the State Health Agency. Payment for service is made to the doctor and the hospital by check from the State Department of Public Health.

The care of a sick infant is initiated in the same manner as for maternity service. A patient suffering from any condition is accepted for care, and consultation provided if possible when needed. When the patient is discharged, a brief clinical summary must accompany the physician's bill for services.

Any individual or agency who learns of an expectant mother or her sick infant can aid in initiating an application for assistance.

OTHER PROBLEMS

A few of the problems which still confront those responsible for the operation of this plan might well be mentioned.

Refusal to stay in the hospital for 10 days has been found to be due to indifference of the physician, the desire of hospital authorities to speed the turnover where institutions are crowded, or to anxiety over household problems such as the care of small children at home. The first two can be guarded against by kindly suggestion and perseverance. To help the last difficulty, arrangements can sometimes be made in advance to provide adequate help. This will solve the problem for some homes. Rural homes suffer less from this particular difficulty. Care in a good hospital is urged in the hope that it will stimulate interest in getting the best possible obstetric care.

Another problem arises from the reluctance of physicians to submit adequate records which are the principle means of judging standards of care.

A further difficulty is that some hospital superintendents feel that they are entitled to as large fees as they can possibly get. It is true that the costs in small institutions are such that the fees paid under this plan represent little opportunity for profit. Under the Children's Bureau plan for payment of properly estimated per diem costs to be initiated in the next fiscal year, this difficulty will no longer exist.

It might be noted that physicians have taken a very liberal attitude toward their fees and few complaints have been registered. Assured payment for service from a group which, as individuals, are frequently guilty of nonpayment of doctors' bills, the physician has every reason readily to accept care of these cases.

COMPLETED AND PENDING SERVICES

By January 1, 1943, all funds allocated to New Mexico ($19,000) had been earmarked to provide for 335 applicants whose care had been authorized.

All physicians in the state were then notified that there would have to be a lapse in the service until additional funds were secured. There was a prompt falling off in the rate of filing applications, due in part to the unwillingness of physicians and hospitals to accept cases without assurance of payment. Despite this fact, during January and February 225 new applications were received and most of these have now been approved.

Maternity care has been given by 45 different doctors at an average cost of $76 per case for medical and hospital care. All cases were hospitalized except 2. The average hospital cost was $42 per case.

The program has meant a great deal to both those receiving the care and also to their families. This is attested by opinions expressed to workers in Red Cross home service, health and welfare department workers, and many others who have been in touch with the situation. Pathetic letters expressing the great need of many of the young mothers have accompanied the requests for the service and many have expressed the satisfaction experienced from having had the opportunity to secure good care when such a prospect often seemed remote.

Beside the actual benefits of medical and hospital care for the mother and her babies, the educational value of the program has been apparent. A realization of what constitutes good obstetric care has come to many homes and rural areas of the state which have never known anything but the care by midwives in crowded adobe homes without basic conveniences.

The people of New Mexico have enjoyed real benefit from this program. It is a venture into a new field of health activity that has been well received. Additional social security is made possible by this plan for the families of our fighting men at a time when this adequate care means much to morale on both the battle front and the home front.

Statistical Aspects of Coding and Tabulating Medical Data on Birth and Stillbirth Certificates*

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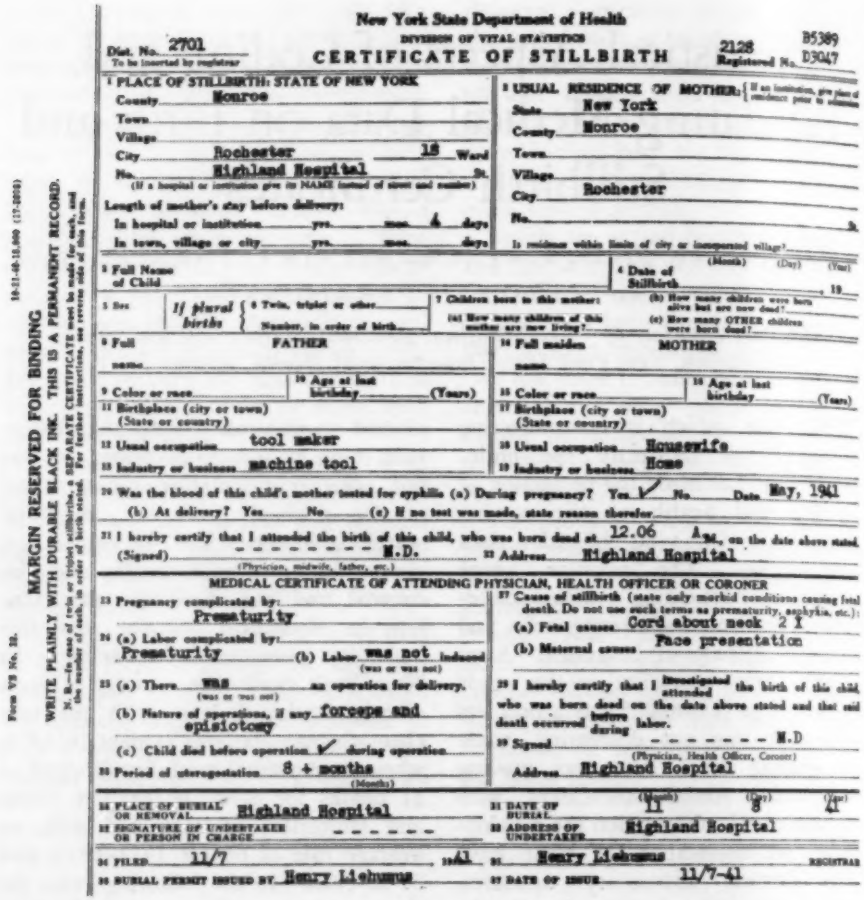
THE war, which is now affecting directly or indirectly the entire human race, has made the protection of the life and health of the coming generation a more vital obligation than ever before. The popular adage coupling childbearing with child-burying epitomizes the experience and fatalistic attitude of centuries. Even in 1906 infant mortality, in the words of Sir George Newman,[1] was a problem because it was not decreasing, while the general death rate was moving downward. Almost coincident with the time of this observation the development and application of what have since become elementary measures, such as the pasteurization of milk, the protection of water supplies, and immunization against diphtheria, demonstrated the preventability of a great many of the deaths in infancy. For example, thirty years ago for every 1,000 children born alive in New York State, 101 died before reaching their first birthday; in 1941 the rate of mortality was but 33.

One need go back only a few years to find an attitude of almost complacent resignation toward the shamefully high maternal mortality; it was not until representative organizations of the medical profession instituted searching inquiries into the causes and circumstances of such deaths, and discovered and publicized the shortcomings in obstetrical practice that this mortality commenced to decline. In New York State the success of such efforts, combined later with the new chemotherapy, became evident in 1934, when the maternal mortality dropped to 51 deaths for every 10,000 live births and stillbirths, as compared with an average rate of 60 for 1931–1933, and 61 in 1933. In the following years the downward movement continued at an accelerated pace, and in 1941 the rate was only 22, a reduction of 64 per cent in 8 years.

Even with the present low rates, however, the loss of life of mothers and infants from diseases and conditions associated with childbirth is still unnecessarily high. To make further progress possible, expert opinion[2] stressed the need for certain basic medical information that was not available with respect to all births. This information could be continuously and currently secured only by means of birth and stillbirth certificates. Therefore, the content of the medical part of

* Presented at a Joint Session of the Maternal and Child Health and Vital Statistics Sections of the American Public Health Association at the Seventy-first Annual Meeting in St. Louis, Mo., October 27, 1942.

FIGURE 1



New York State Department of Health
DIVISION OF VITAL STATISTICS
CERTIFICATE OF STILLBIRTH

Dist. No. 2701 — To be inserted by registrar
2128 Registered No. B5389 D3047

MARGIN RESERVED FOR BINDING
WRITE PLAINLY WITH DURABLE BLACK INK. THIS IS A PERMANENT RECORD.

1 PLACE OF STILLBIRTH: STATE OF NEW YORK
County Monroe
Town
Village
City Rochester 18 Ward
No. Highland Hospital St.
(If a hospital or institution give its NAME instead of street and number)
Length of mother's stay before delivery:
In hospital or institution yrs. mos. 4 days
In town, village or city yrs. mos. days

2 USUAL RESIDENCE OF MOTHER: (If an institution, give place of residence prior to admission)
State New York
County Monroe
Town
Village
City Rochester
No. 5
Is residence within limits of city or incorporated village?

3 Full Name of Child

4 Date of Stillbirth (Month) (Day) (Year), 19

5 Sex

If plural births: 6 Twin, triplet or other. Number, in order of birth.

7 Children born to this mother: (a) How many children of this mother are now living? (b) How many children were born alive but are now dead? (c) How many OTHER children were born dead?

8 Full name FATHER

9 Color or race

10 Age at last birthday (Years)

11 Birthplace (city or town) (State or country)

12 Usual occupation tool maker

13 Industry or business machine tool

14 Full maiden name MOTHER

15 Color or race

16 Age at last birthday (Years)

17 Birthplace (city or town) (State or country)

18 Usual occupation Housewife

19 Industry or business Home

20 Was the blood of this child's mother tested for syphilis (a) During pregnancy? Yes ✓ No Date May, 1941
(b) At delivery? Yes No (c) If no test was made, state reason therefor

21 I hereby certify that I attended the birth of this child, who was born dead at 12.06 A.M., on the date above stated.
(Signed) - - - - - - - - - M.D. 22 Address Highland Hospital
(Physician, midwife, father, etc.)

MEDICAL CERTIFICATE OF ATTENDING PHYSICIAN, HEALTH OFFICER OR CORONER

23 Pregnancy complicated by: Prematurity

24 (a) Labor complicated by: Prematurity (b) Labor was not induced (was or was not)

25 (a) There was an operation for delivery. (was or was not)
(b) Nature of operations, if any forceps and episiotomy
(c) Child died before operation ✓ during operation

26 Period of uterogestation 8 + months (Months)

27 Cause of stillbirth (state only morbid conditions causing fetal death. Do not use such terms as prematurity, asphyxia, etc.):
(a) Fetal causes Cord about neck 2 1
(b) Maternal causes Face presentation

28 I hereby certify that I investigated / attended the birth of this child who was born dead on the date above stated and that said death occurred before / during labor.
29 Signed - - - - - - - - M.D
(Physician, Health Officer, Coroner)
Address Highland Hospital

30 PLACE OF BURIAL OR REMOVAL Highland Hospital
31 DATE OF BURIAL (Month) 11 (Day) 8 (Year) 41
32 SIGNATURE OF UNDERTAKER OR PERSON IN CHARGE - - - - - -
33 ADDRESS OF UNDERTAKER Highland Hospital
34 FILED 11/7 19 41 35 Henry Liebmann REGISTRAR
36 BURIAL PERMIT ISSUED BY Henry Liebmann 37 DATE OF ISSUE 11/7-41

Form VS No. 22. 10-21-40-10,000 (17-2018)

the standard certificate of stillbirth was elaborated, and a set of optional questions added to the standard form of birth certificate. The stillbirth certificate and the optional questions on the birth certificate, as employed by the New York State Department of Health * beginning January, 1940, are shown in Figures 1 and 2.

COMPLETENESS AND ACCURACY OF MEDICAL INFORMATION

Since the medical questions are an integral part of the stillbirth certificate, they are practically always answered. The questions on the certificate of live birth do not constitute a legal part of the certificate, and the physicians are under no compulsion to answer them. It is, therefore, particularly gratifying that answers to the latter questions appear on somewhat more than 90 per cent of the birth certificates; the supplementary questions are wholly disregarded on 7 per cent; weight alone is given on approximately 2 per cent. The incomplete certificates are concentrated in comparatively few counties—in 1941 more than half of

* In New York City a special detailed report form has been in use since 1938.

the incomplete certificates were filed in only 6 of the 57 counties.

Since the purpose of the questions on the certificates is not only to ascertain the incidence of complications and of the methods of delivery but also to measure the neonatal, stillbirth, and maternal mortality associated with these factors, every certificate of an infant or maternal death is matched with the corresponding birth certificate. In our procedure this is accomplished in the following manner: For every infant death the date and place of *birth* are added to the punched death card (which is a combined statistical and index card). Once a month all of these cards are duplicated, foundlings and births out of state are excluded, the remaining cards are sorted by month of birth and soundexed name, and then used as index cards with which to search the monthly *birth* indexes. If the matching birth certificate is not found, an inquiry is sent to the registrar of the community where the birth occurred. Certificates of puerperal deaths, except those stated to be associated with an undelivered pregnancy or an abortion of less than 5 months' gestation (the reporting of which is not required by the New York State Public Health Law), are used in similar manner in a search of both live birth and stillbirth indexes. If the matching birth certificate cannot be found, a form letter is sent to the physician who signed the death certificate asking for the period of gestation and the date and place of birth. At the end of the year a card is punched for every infant or maternal death combining, on the same card, the pertinent data from the matched birth and death certificates.

The comparison of the birth and stillbirth certificates with the death certificates indicates that in an indeterminate number of cases the replies to the additional questions are not suf-

FIGURE 2

SUPPLEMENTAL REPORT BY PHYSICIAN

NOT TO BE COPIED INTO LOCAL REGISTER

The answers to the following questions, which the New York State Department of Health is asking the physician in attendance at this birth to supply, will form the basis for more intensive work toward further progress in the protection of the lives of infants and mothers.

All of the facts entered by the physician on this side of the certificate will be considered confidential and will be used only for statistical purposes. None of them will, under any circumstances, appear in the certifications or transcripts issued by the Department.

Pregnancy, complications of: NONE

Labor, complications of: NONE

Weight of baby at birth ... grams or 7 lbs. 5 ozs.

Were any operative or instrumental procedures used? YES

Specify MID FORCEPS

Indications CONTRACTED PELVIS

Did baby have any
(1) Congenital malformation? NO Describe ...

(2) Birth injury? NO Describe ...

INSTRUCTIONS

In order to comply with the law, this certificate must actually reach the Local Registrar within five days of the date of birth.

Registrars are instructed not to accept a birth certificate if that part of it preceding the physician's signature: (1) Is incompletely filled in; (2) Is not written throughout "legibly, in durable black ink," as the law expressly requires; (3) Is mutilated, grossly soiled or defaced, inaccurate; (4) Contains any erasure, interlineation, correction, or alteration of anything printed or written on the certificate.

Note: If a mistake is made and observed *before* the certificate is accepted for registration, another blank may be filled in correctly and substituted for the erroneous certificate; but no certificate of birth after its acceptance for registration by the registrar, shall be altered or changed in any respect, otherwise than by amendment properly dated, signed and witnessed. (Cf. V.S. Law, Par. 387) A blank (Form VS No. 33) will be supplied by the Local Registrar or the State Department of Health for the legal correction of an erroneous birth record.

Statement of Residence of Mother. Frequently the post office address of the mother is a city or an incorporated village, while the actual place of residence is outside the limits of the city or village. It is, therefore, important that the question "Is residence within the limits of city or incorporated village?" always be answered by "yes" or "no".

Statement of Occupation. Make some entry in this section for each parent. For a woman whose only occupation is that of home housework, write *housework* in answer to item 18 and *own home* in answer to item 19. For a person engaged in domestic service for wages, however, designate the occupation by the appropriate terms, as *housekeeper—private family, cook*—*hotel*, etc. For a person who has no occupation whatever write *none*.

In stating the occupation, avoid the use of such indefinite terms as "employee," "worker," "operative," "engineer," "mechanic," "clerk," etc. Find out the particular kind of work done and return that, as *spinner, weaver*, etc.

In stating the industry or business, avoid the use of such general terms as "store," "factory," "mill," etc. State the particular kind of store, factory, mill, etc., as *grocery store, soap factory, cotton mill*, etc.

Physicians are required to report ophthalmia neonatorum (babies' sore eyes) to local health officer within 24 hours from the time when first seen.—SANITARY CODE, CHAP. 11, REG. 1 AND 2. *A midwife, nurse, or other person having charge must report immediately to health officer or physician inflamed, reddened eyes of infant within the age of 2 weeks.*—PENAL LAW, §482.

ficiently descriptive and at times incorrect. A birth certificate may contain no reference to a complication of pregnancy or labor, but the corresponding maternal death certificate, filed on the same date and signed by the same physician, may bear a positive statement, such as toxemia, placenta previa, or heart disease. For example, in one case the cause of death was given as chronic cardiovascular disease, difficult delivery with breech presentation; the woman died 16 hours after delivery, but the birth certificate mentioned only abruptio placenta as complication of pregnancy or labor. Errors are also discovered through the check of the certificates against the reports of positive Wassermann tests filed with the Division of Syphilis Control. Here it is occasionally found that a birth certificate contains no mention of syphilis as a complication while the woman was, in fact, under treatment for syphilis. Again, a birth injury or congenital malformation may be entered as the cause of an infant's death, while the corresponding birth certificate contains no mention of birth injury or malformation. In analyzing or interpreting the tabulated data it is, therefore, important to bear in mind that the different complications are in varying degree *understated*.

CODING OF COMPLICATIONS OF PREGNANCY AND LABOR

From a survey of the manner in which the certificates are filled out, it soon became apparent that it would be impossible to make any attempt to separate complications of pregnancy from complications of labor and indications for operation. For instance, the birth certificate reproduced here (Figure 2) states "none" under both complications of pregnancy and complications of labor, and yet "contracted pelvis" is given as the indication for the mid forceps operation. The sample stillbirth certificate (Figure 1) gives "prematurity" under complications of pregnancy and complications of labor, but "face presentation with cord twice about neck" is entered as cause of stillbirth. Another stated *no* complications of pregnancy, persistent occiput posterior, prolonged second stage, and secondary dystocia as complications of labor, but gave preëclamptic toxemia as cause of stillbirth. There are many such cases. It was therefore decided to code and tabulate two complications whenever two sufficiently distinct complications were stated anywhere among the items. By sufficiently distinct, we mean that we do not code two forms, types, manifestations or symptoms of toxemia on the same case, or two of dystocia, but we do code both toxemia and dystocia, or toxemia and placenta previa, or dystocia and diabetes, etc. In the comparatively rare cases where more than two distinct complications were stated, only two were coded during 1940 and 1941, attempting to retain the more serious conditions.

The preparation of the code, which had the patient and invaluable advice of Drs. Elizabeth Gardiner and Helen Owen of the Division of Maternity, Infancy, and Child Hygiene, commenced with the listing of *all* terms appearing on the certificates. The extensive compilation (there were found 32 different ways of stating deviations in the bony pelvis and 30 of uterine inertia) was first compressed into 60 items and thus used in 1940 and 1941. Following the initial tabulations of the 1940 data, the code was further condensed to 36 terms and it is these terms that appear in Table 1. This table summarizes the incidence of the various complications of pregnancy and labor among the live births and stillbirths occurring in the 18 month period from July 1, 1940, through December, 1941, and the neonatal and maternal deaths associated with them.

TABLE 1

Incidence of Complications of Pregnancy and/or Labor

New York State, Exclusive of New York City, July, 1940–December, 1941

		Live Births	*Still-births*	*Deaths under 1 Month*	*Maternal Deaths*
Total		143,218	3,602	3,602	231
Questions on complications answered		130,152	3,364	3,244	219
No complications		95,455	723	1,603	35
One or more complications		34,697	2,641	1,641	184
Total complications		39,831	3,470	2,049	257
Only one in this group coded	Eclampsia	196	68	32	18
	Other toxemia	3,315	465	210	32
	Pyelitis, or other infection	495	35	34	6
	Placenta previa	737	155	158	13
	Premature separation of placenta	525	503	134	18
	Bleeding during pregnancy, threatened abortion	498	39	79	1
	Hemorrhage during labor, no mention of placental abnormality	111	16	16	1
	Prolapsed cord, twisted, knotted or short cord	646	623	86	8
	Breech presentation	3,259	271	289	8
Only one in this group coded, preferring in order listed	Deviations of the bony pelvis	2,583	150	78	26
	Malpresentations other than breech	649	110	41	10
	Malformation or excessive size of fetus	25	47	19	1
	Hydramnios	192	130	79	2
	Uterine inertia	3,609	75	70	9
	Other dystocia				
	Rigid perineum, perineal scars, etc.—questionable dystocia	16,590	313	382	41
	Previous Cesarean section	530	5	26	6
	Previous pelvic trauma	121	1	9	..
	Precipitate delivery	214	11	24	1
	Lacerations	1,528	2	14	1
	Postpartum hemorrhage	561	1	17	5
	Rupture of uterus	10	16	2	6
	Surgical shock	16	3	4	3
	Diseases of the heart	508	37	27	19
	Syphilis	187	36	13	1
	Chronic nephritis	99	40	10	..
	Other diseases of the genitourinary system	130	9	8	1
	Tuberculosis	88	2	3	1
	Pneumonia, influenza, bronchitis, acute respiratory	180	30	24	3
	Diabetes	93	32	14	3
	Anemia and other blood diseases	210	18	13	2
	Pelvic tumors	147	30	15	2
	Appendicitis	80	4	11	..
	Diseases of the endocrine glands	131	26	6	3
	Mental and nervous diseases	76	5	3	1
	All other intercurrent diseases	430	19	28	2
	Accidents and over-exertion	98	83	25	2
Disregarded in 1942	Infarction of placenta, etc.	19	24	3	..
	Dry labor	570	28	29	..
	Edema	107	8	4	1
	Varicosities	268	..	10	..

The brackets and marginal notations indicate the major changes made in 1942 either by combination of terms or by further subdivision.

In condensing the original list of 60 complications to the present 36, a few terms were given up entirely: placental infarction, dry labor, edema, and varicosities; most of the condensation was made by combining related terms, such as, all malpresentations other than breech, all lacerations, all previous pelvic trauma, all acute respiratory illness. The largest change of this kind was the combination of six separate terms into "other dystocia." * It was

* Persistent occiput posterior, Bandl's ring, anomalies of the soft parts, disproportion (without mention of abnormality of the bony pelvis), fetal distress, and dystocia without mention of underlying condition.

found that the statements on the certificates do not allow any significant, logical, or consistent distinction between these various forms of dystocia. Some of the conditions described in terms most commonly used on the certificate, such as transverse arrest, arrest of progress, and prolonged second stage, could be due either to persistent occiput posterior position, disproportion, non-dilation of cervix, etc. They might also, of course, be due to inertia, which is still kept as a separate title. The end result is that while the title "uterine inertia" is a fairly homogeneous group, some of the cases of inertia are in the miscellaneous group "other dystocia."

The tabulations have been made to show both an unduplicated count of cases with and without complications, and also, under *each* complication, all cases with that particular complication whether or not it was associated with some other. That is, any case with two distinct complications appears in the tabulation twice, once under each. In general, it may be noted that there were two distinct complications in 15 per cent of the live births with complications, 31 per cent of the stillbirths, and 40 per cent of the maternal deaths.

Beginning with 1942, it was decided to allow for punching three complications for each case: two puerperal and one non-puerperal; and in addition, to provide for tabulating *all* distinct complications, however many there might be for any particular case. For all cases in which there are more than two puerperal or one non-puerperal complication, these as well as the other necessary data * are entered on index cards and, at the end of the year, added by hand to the machine tabulations.

CODING OF OPERATIVE PROCEDURE

All births have been classified into nine categories for operative procedure, as indicated in Table 2. Three of the

* Single or plural, full-term or premature, home or hospital, operative procedure, birth injury, age of mother, and number of previous live births and stillbirths.

TABLE 2

Incidence of Operative Procedures

New York State, Exclusive of New York City, July, 1940–December, 1941

	Live Births	*Still-births*	*Deaths under 1 Month*	*Maternal Deaths*
Total	143,219	3,602	3,602	231
Question on operative delivery answered	131,158	3,255	3,272	217
No operation	89,841	2,304	2,167	70
Operated	41,317	951	1,105	147
Episiotomy alone	5,705	45	72	3
Low forceps Forceps, plane unspecified	24,526	231	356	40
Mid forceps High forceps	3,758	109	107	5
Breech extraction	1,493	87	127	5
Version and extraction	1,632	224	137	17
Cesarean section	3,445	158	226	65
Other operations for delivery	258	40	25	4
Manual extraction of fetus Bagging, not for induction Mutilating operation Other operative procedures Operated, type not specified	Not available separately in 1940-41			
Manual removal of placenta	174	3	11	1
Induction of labor, no other operation *	326	52	44	7

* The disparity in the relative incidence of induction of labor associated with stillbirths and with live births is, in very large measure, due to the fact that the stillbirth certificate, but not the certificate of live birth, contains a specific question regarding induction.

categories used in 1940 and 1941, low forceps, mid forceps, and "other operations," were further subdivided in 1942. A study of unpublished data by one of the authors elsewhere has shown that high forceps and forceps plane unspecified are associated with much much higher fetal loss than either low or mid forceps. As a matter of fact, in a 1 month sample run of the 1942 cards the stillbirth rates for both the former are ten times as high as the rates for low or mid forceps.

CODING OF OTHER MEDICAL INFORMATION

Congenital malformations and birth injuries of the infant (asked for on live birth certificates only) were merely coded "yes" or "no" in 1940–1941, but in 1942 are being coded by a simple one-column code, designed mainly to allow correlating by mechanical tabulation birth injuries with operative procedure and cause of neonatal death. For more detailed analysis, a hand-written card is made out for every case with a congenital malformation or birth injury, copying identifying information, physician's exact statement of nature of malformation and/or injury, physician's name, etc. These cards are used for the matching with the register of crippled children, and for detailed hand-tabulations of type of malformation, etc. The results of this matching for the 1940 births are shown in the 1940 Annual Report of the Division of Vital Statistics, and those for 1941 will be published shortly.

The code used for cause of stillbirth and the rules for treatment of joint causes are those developed by the U. S. Children's Bureau and approved by the Committee on Research and Standards of the American Public Health Association in 1940 for publication and trial in the United States. The tabulation and analysis of the 1940 stillbirths which appeared in the Annual Report of the Division of Vital Statistics for that year give a measure of the degree of fallacy inherent in any system of selecting a preferred cause. For example, only 198 stillbirths in 1940 were charged to toxemia, while there were actually 391 or practically twice as many cases with toxemia stated as a complication; similarly, diseases in and accidents to the mother were charged with 101 of the stillbirths, but were mentioned as complications in 206 cases.

In coding the weight of the infant at birth, the following nine groups have been found most useful for our particular purposes:

I. *Non-viable prematures*
   Less than 1,500 gm.; or 3 lbs., 5 oz.
II. *Viable prematures*
   (a) 1,500–1,749 gm. (3 lb., 5 oz.–3 lb., 13 oz.)
   (b) 1,750–1,999 gm. (3 lb., 14 oz.–4 lb., 6 oz.)
   (c) 2,000–2,249 gm. (4 lb., 7 oz.–4 lb., 15 oz.)
   (d) 2,250–2,499 gm. (5 lb.–5 lb., 7 oz.)
III. *Normal weight*
   2,500–3,999 gm. (5 lb., 8 oz.–8 lb., 12 oz.)
IV. *Overweight*
   (a) 4,000–4,499 gm. (8 lb., 13 oz.–9 lb., 14 oz.)
   (b) 4,500–4,999 gm. (9 lb., 15 oz.–10 lb., 15 oz.)
   (c) 5,000 gm. and over (11 lb. and over)

TABULATIONS

We are confining the basic tabulations to a series of correlations of operative procedure with complications of pregnancy or labor, for eight specific groups each, of live births, stillbirths, neonatal deaths, and maternal deaths. While most of the births in New York State occur in hospitals, many mothers are still delivered at home; in 1941 they numbered 16,750, or 17.3 per cent. For this reason, as well as because of the recognized differences in home and hospital cases, this subdivision was added to the natural divisions into single and plural births, premature and full-term. Thus the tables correlating operative procedure with complications of pregnancy and labor are simultaneously specific for the three dichotomous classifications of plurality, gestation, and place of birth.

TABLE 3

Stillbirth, Neonatal, and Maternal Mortality Rates

New York State, Exclusive of New York City, July, 1940–December, 1941

	Total Births	Stillbirths per 1,000 Total Births	Deaths under 1 Month of Age, per 1,000 Live Births	Combined Infant Loss per 1,000 Total Births	Maternal Deaths per 1,000 Total Births
Total	146,820	24.5	25.2	49.1	1.6
Premature					
Single	7,384	234.4	310.5	472.1	7.8
Plural	1,033	131.7	328.9	417.2	...
Full term					
Single	136,508	12.4	11.1	23.3	1.2
Plural	1,895	25.9	27.6	52.8	4.2

TABLE 4

Fetal Loss Rates per 1,000 Total Births*

New York State, Exclusive of New York City, July, 1940–December, 1941

	Total		Single Full Term	
	Hospital	Home	Hospital	Home
Total	48.5	51.9	23.6	22.3
With complications	107.9	185.3	58.4	91.7
No complications	23.2	27.7	10.0	11.9
With operative delivery	47.9	73.0	31.2	58.8
No operative delivery	48.8	47.6	19.3	19.0

* Stillbirths plus deaths under 1 month of age

By means of summary punch cards the basic tabulations are used as a source for numerous derivative tables combining live births and stillbirths, stillbirths and neonatal deaths, home, and hospital deliveries, etc. These combinations are obtained by the printing tabulator simultaneously for all the individual categories of operative procedures, with automatic controls and subtotals of any desired identifying categories. Another advantage of the summary cards is the ease with which the data can be accumulated and combined from year to year.

A few of the mortality rates are shown in Tables 3 and 4. It will be noted that while the fetal loss was practically the same for total home and total hospital deliveries, for cases with complications or with operative procedures the mortality rates were twice as high in home deliveries as in hospital deliveries. The same comparisons held for single full-term births only. The facts in detail, as well as an analytical discussion of them which cannot be presented here, will be published in the near future.

Besides the tabulations for the entire area of the state, exclusive of New York City, detailed tabulations have been made showing for individual hospitals the births, stillbirths, and neonatal deaths, full-term and premature, and also the births by method of delivery.

This outlines the general procedure developed in the New York State Department of Health for handling the medical data on the birth and stillbirth certificates. In the time available for this paper, it is obviously impossible to consider details of procedure or present analyses of the results. It is hoped that this survey will furnish a basis for purposeful discussion here and elsewhere.

REFERENCES

1. Newman, George. *Infant Mortality*, London, 1906.

2. See, for example, Maternal Mortality in New York City. *Report by Committee on Public Health Relations*, New York Academy of Medicine. The Commonwealth Fund, New York, 1933.

Supplemental Birth Certificate Information Used in Planning Crippled Children and Maternal and Child Health Programs*

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THE effectiveness of state health work depends on the strength of the local health organizations, while the effectiveness of the local health activities depends upon the interest and understanding of the health officials and their ability to apply health knowledge. In any state, or even within a county, problems will vary. Thus an important function of any state health department is to see that individual community problems are recognized and solved in the order of importance. Every available source of information must therefore be utilized in planning these programs.

Wisconsin is fortunate because of the close working relationship of the Bureau of Maternal and Child Health with the Bureau of Vital Statistics. Early in the days of the expanding maternal and child health program in Wisconsin it was necessary for the bureau to assign one of its staff to make special statistical studies. After training in vital statistics and public health education, this individual was transferred to the Bureau of Vital Statistics, through which office current reports and special studies are prepared.

Birth certificates are extensively used by local public health nurses, especially in the demonstration programs. Early in the organization of any county work this resource gives the public health nurse information as to the proportion of deliveries done by doctors, and through direct contacts with them she obtains their coöperation in referral of prenatal patients for home contacts. In planning home visits special consideration is given to prematures, first born babies, or babies born to mothers who have lost several children. At one time special follow-up was indicated on any delivery not attended by a doctor. This, however, is no longer a problem, since more than 99 per cent of total deliveries in Wisconsin are by physicians.

THE PROBLEM OF INFANT BLINDNESS

The use of birth certificates as a means of obtaining additional information was not a new departure in Wisconsin. In 1909, by order of the State Board of Health the question—"Was silver nitrate used to prevent infant blindness?"—was placed on the birth certificate. In addition a rule was passed requiring that silver nitrate be

* Presented at a Joint Session of the Maternal and Child Health and Vital Statistics Sections of the American Public Health Association at the Seventy-first Annual Meeting in St. Louis, Mo., October 27, 1942.

used in the eyes of all new-borns. This made it possible for immediate follow-up on any cases where silver nitrate had not been used. Prior to 1909 at least one-third of the admissions to the schools for the blind were because of ophthalmia neonatorum, whereas now only rarely is a case due to this cause. Another indication of the effectiveness of this procedure was a recent survey of the entire state of Wisconsin (population 3,137,587) which showed only 10 cases of blindness among children under 5 years of age. Four of these were known to have been caused from injuries and 3 were due to congenital conditions. Ophthalmia neonatorum was proved as the cause in only 3 of the total cases—one, an Indian child born in 1939 who had received no prophylactic care. This one question on birth certificates thus played a very important part in solving the problem of infant blindness.

LOCATING PHYSICALLY HANDICAPPED CHILDREN

The second supplement was added to the certificate in 1917—"Was child deformed or physically defective? Yes, No, Nature of Defect." Since that time this information has been used to locate handicapped children. As the current certificates are filed, a copy of any showing a deformity or physical defect is made. Each month these are sent to the Crippled Children's Division in the Department of Public Instruction. In 1941 this source was responsible for 22 per cent of all the crippled children registered. Immediately upon receipt of these certificates a card is made up for the individual child, the color of the card varying according to the type of defect. Defects are thus sorted by color and filed by county. Each field worker then receives the names and all available information on individuals in the territory she serves. If there has been no indication that the child has died, she writes, telephones, or makes a personal visit to the physician who signed the birth certificate. Such conditions as harelip, cleft palate, and club feet, which need early correction are immediately followed up, and the others as indicated. Usually the family physician requests the visiting staff member of the Crippled Children's Division to consult with the family directly and work out with them a plan for care. Exceptions occur in families of adequate means who prefer to make their own arrangements. In case the local public health nurse has not already made a routine neonatal visit, she is notified if any special demonstration of nursing procedures is needed.

PROBLEMS RELATED TO OBSTETRIC PRACTICE

Wisconsin in 1940 again sought the coöperation of physicians in obtaining additional information on birth certificates, with the hope that it might bring a better understanding of existing problems. The questions were worded to obtain information on complications of pregnancy and labor, prenatal care, test for syphilis during pregnancy, type of delivery, indications for operative delivery, and degree of fetal asphyxia. A statement indicated that this information would not become a part of official copies of the birth certificate. The former questions of illegitimacy, use of silver nitrate, and presence of deformity and type were included in this portion of the certificate. It was felt that this information would be of special value in helping local physicians to recognize their problems and to stimulate interest in their solution. The bureau also hoped to gain further information for effective program planning.

CODING AND STATISTICAL PROBLEMS

The first problem was the coding of this material. A detailed code was de-

vised by the Bureau of Maternal and Child Health which would include as much of this information as possible. The certificates are coded by a clerk assigned to the Bureau of Vital Statistics. Arbitrarily, all material is coded currently as stated, regardless of discrepancies which occasionally arise because the information is not written in the proper space or there are direct contradictions. As questions arise in regard to coding, the certificates are laid aside and several times each week these certificates are cleared with the obstetrical consultant.

Since the old form of certificate without the supplement was coded as "No data," this group was relatively high the first year. A few physicians failed to understand the value of these additional questions; however, letters to these doctors resulted in their coöperation. In 1941 incomplete certificates were less than 3 per cent of the total.

A second problem confronting the bureau was the tabulation and analysis of this supplemental information. It was necessary to take into consideration the fact that the statistical staff were crowded with work and that facilities were limited. The first tabulations of the new material were considered a special study. However, the present and more desirable point of view is that these tabulations are a routine part of the analysis of birth certificate information.

Each item of the supplemental code is tabulated separately. This is very essential, for once the complete sorting is done, the material is available for combining into any form desired. Table 1 which lists the complications of pregnancy shows how this material can be combined. By early detailed analysis it was possible to eliminate certain items which rarely occurred and to add combinations which appeared frequently.

The statistical consultants of the

TABLE 1

Complications of Pregnancy

1940–1941 Wisconsin Resident Birth Certificates

	1940		1941	
	Number	*Per cent*	*Number*	*Per cent*
Normal	46,242	82.7	50,929	88.2
Complications	4,851	8.7	4,369	7.6
No data	4,816	8.6	2,451	4.2
Total	55,909	100.0	57,749	100.0
Analysis of Complications:				
Eclampsia	137		118	
Toxemia	1,283		1,203	
Renal disease	343		479	
Placenta praevia	238		207	
Premature separation of placenta	193		93	
Antepartum bleeding (other)	101		137	
Multiple births	1,001		797	
Hyperemesis	390		217	
Heart disease	159		117	
Hydramnios	91		60	
Diabetes	65		55	
Tuberculosis	23		23	
Syphilis	54		33	
Appendicitis	45		29	
Pelvic tumors	57		48	
Other infectious diseases	109		70	
Minor complications	359		373	
Other incidental diseases associated with pregnancy	100		132	
Maternal congenital defects	15		...	
Miscellaneous	184		303	
Total	4,947		4,494	

Children's Bureau offered valuable assistance in the simplification of sorting procedures. It is to be hoped that the experience of the states that have been using this supplementary information will be of assistance in drawing up a uniform code. A physician's handbook covering such a code would undoubtedly increase the accuracy of recording. It might encourage doctors to fill out the birth certificate themselves rather than depending upon the obstetrical floor nurse. This practice was brought to light by examining certificates from certain large hospitals where almost exact uniformity was noted.

USE OF MATERIALS IN PROGRAM PLANNING

The primary contribution of the supplemental material is to obtain obstetrical morbidity information which previously had not been extensively available. From morbidity and mortality data fatality rates can then be determined, and over a period of years it is hoped that trends may be obtained that will measure the effectiveness of the educational activities. When uniformly coded and tabulated it will be possible also to compare obstetrical results in various sections of the United States.

The actual uses of this material and some of the early results are interesting. One of the first items extensively used was the information on operative deliveries, particularly the information on cesarean sections. Previously the bureau had undertaken an extensive study of this subject and for a number of years had sent out an elaborate questionnaire to physicians on all cases where death followed cesarean section. Questionnaires were also sent to all hospitals and maternity homes to determine the number of hospital deliveries and sections. There was a 100 per cent return from the 225 hospitals and

TABLE 2

Indications for Cesarean Section

(Wisconsin 1940–1941)

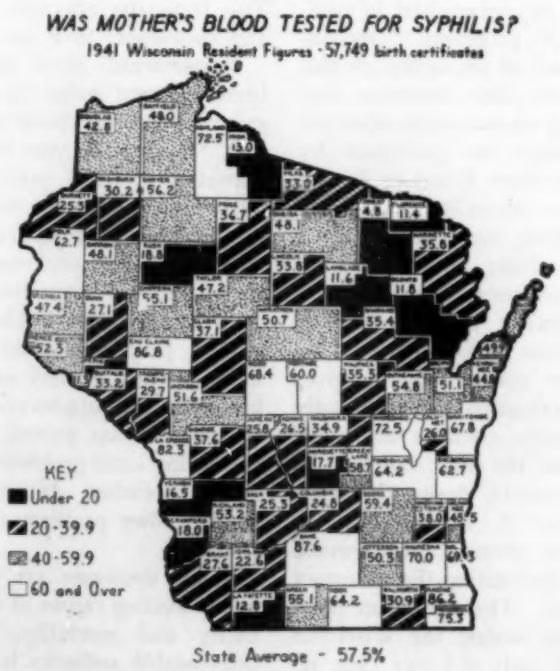
Indications	*Wisconsin Sections for 1940*		*Wisconsin Sections for 1941*	
	Number	*Per cent*	*Number*	*Per cent*
Contracted pelvis and disproportion	572	39.7	558	35.4
Previous cesarean section	214	14.9	316	20.0
Toxemia	110	7.6	86	5.4
Placenta praevia	106	7.4	121	7.7
Reason not stated	70	4.9	98	6.2
Premature separation of placenta	45	3.1	44	2.8
Uterine inertia	40	2.8	42	2.7
Eclampsia	35	2.4	40	2.5
Prolonged labor	33	2.3	58	3.7
Elderly primipara	31	2.1	26	1.6
Breech	28	1.9	22	1.4
Other maternal complications	19	1.3	10	0.6
Occiput posterior	16	1.1	31	2.0
Transverse presentation	14	1.0	13	0.8
Previous pelvic surgery	13	0.9	15	0.9
Elective procedure	13	0.9	31	2.0
Maternal congenital defects	12	0.8	10	0.6
Contraction ring	12	0.8	..	...
Miscellaneous	11	0.8	23	1.5
Other cephalic malpresentation	10	0.7	6	0.4
Heart disease	9	0.6	10	0.6
Ruptured uterus	8	0.6	5	0.3
Fetal asphyxia	8	0.6	7	0.4
Diabetes	4	0.3	1	0.1
Prolapsed cord	3	0.2	0	0.0
Fetal malformation	3	0.2	4	0.3
Total	1,439	99.9	1,577	99.9

maternity homes licensed for obstetrical care. In 1934 there were 868 sections performed in the state, while in 1939 there were 1,221 sections. The number of cesarean sections reported from the birth certificates showed 1,439 sections for 1940 and 1,577 sections during 1941. These 1940 and 1941 figures correspond very closely with the number obtained by the more laborious and less accurate method of direct questionnaires.

Additional information was also made available as to type and indication for section. In 1940 we found 86.4 per cent of the sections were of the classical type, 13.1 per cent were low cervicals, and 0.5 per cent were of the radical type. This contrasts with the 82.4 per cent classical sections, 16.2 per cent low cervicals, and 1.3 per cent radical type shown in 1941. The downward trend in classical sections and the slight increase in the low and radical type of section may in part be due to the intensive postgraduate approach to this problem. The indications given for cesarean sections are listed in Table 2. Information of this type will be of great value in observing future trends.

Recent developments very clearly show the value of gathering all available information on births and using this constantly in program planning. As a direct result of the presentation of cesarean section data at the Medical Society meeting in Wisconsin a year ago, local physicians have initiated studies and discussions in their own communities. In certain instances hospital staffs have set up regulations requiring consultation prior to any major obstetrical operation. Several leading obstetricians have presented additional material on cesarean sections and emphasized the responsibility of the medical profession toward such problems. Favorable changes are definitely oc-

FIGURE 1



curring as a result of tangible information properly presented to the medical profession.

When this supplemental information is tabulated by county, it stimulates the spirit of competition which so frequently seems to further health programs. An example of this is the use of material on the test for syphilis. This information when tabulated by counties as shown in Figure 1 reveals a range from 4.8 per cent to 87.6 per cent in the use of prenatal Wassermanns. When such maps are shown at medical meetings physicians in those counties having the low rates, which show up as black on the map, immediately want to improve their record. The question as worded on the birth certificate—"Was mother's blood tested for syphilis?"—may be confusing as some certificates indicating "yes" definitely stated that this was the premarital Wassermann test which is required in Wisconsin. These maps have also been used in individual contact work with physicians and in postgraduate medical programs. One interesting comment of physicians on this question has been their statement that they have used it to encourage reluctant patients to accept the procedure by stating that the State Board of Health requires them to report it on the birth certificate. After such statement a patient rarely refuses.

Information on prenatal care is considered inadequate. The question as worded—"At what period of pregnancy did patient first consult you?"—gives insufficient information. Undoubtedly some of the early contacts are made for diagnosis and the physician may be seen only infrequently during the intervening months. A further question asking for total prenatal visits would be valuable in estimating the adequacy of prenatal care. The significant point revealed is that among the Wisconsin births in 1941 only 4.1 per cent received no medical supervision during the prenatal period, and that in 50.3 per cent medical contact was made during the first trimester of pregnancy.

Trends are apparently changing to earlier prenatal care as indicated by the reports of physicians mentioning the effectiveness of educational programs in bringing expectant mothers to them earlier.

Now for the first time statistical information is available which in spite of limitations may over the years give more tangible evidence of progress. It will make possible comparative studies showing how early prenatal care influences the various complications of pregnancy and labor.

More detailed information on prematurity and its relation to complications of pregnancy and delivery, as well as to asphyxia at the time of birth, is available through this source. By special tabulations it has been possible to present county information on prematures born at home and in hospitals. This facilitates allocation of incubators and encourages their use by doctors.

Supplemental birth information has been of great value in planning programs for postgraduate medical education. During the year there have been opportunities for presenting to the medical profession the fact that toxemia is the leading complication of pregnancy, and that prolonged labor is the most frequent complication of labor. As a result, these problems were given a most prominent place at the recent State Medical Society meeting. Tabulations of all supplemental information by counties has proved very useful in presenting local problems to the county medical societies. Interest is stimulated in their own problems and obstetrical results.

While decreases are to be expected in the leading causes of obstetrical morbidity and mortality, there may be unavoidable setbacks in the years im-

mediately ahead because of the present world situation. In these pressing times the supplemental birth certificate material offers a new source of readily available information. Each certificate is a briefly summarized obstetrical history from which may be obtained information concerning obstetrical morbidity. Over a period of years, trends will be available to check progress made in meeting specific problems. In order to be of the greatest possible value there should, however, be uniformity in coding and classification. Every director of public health activities should find supplemental birth data of value in program planning, provided it is properly used and interpreted.

Bottlenecks in Our War Nursing Program*

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"TIME is short" for the nursing profession to undertake the tremendous adjustments called for if it is to make its maximum contribution to this war. "Time is short" for us to review our programs and break the bottlenecks that slow down or even stop our progress.

Today public health nurses have the opportunity and the responsibility of exerting every ounce of leadership they possess. Courageous leadership is needed throughout the nursing profession. It is needed in our relations to the fields of public health, medicine, hospital administration, nutrition, education, and social work. It is needed in relation to the public, the family at home, the worker at work, the citizen as a member of an organized group, the voter at the polls, and it is needed with relation to the various branches of national, state, and local government.

Before this leadership can be exerted effectively, we must have first, a clear picture of the total war nursing program; second, we must be completely objective in analyzing the bottlenecks in the program; and third, we must be determined to break the bottlenecks and get proper action.

At the risk of oversimplification, I would say that our war nursing program consists of four parts: (1) increasing the supply of students; (2) greater use of auxiliary workers both paid and volunteer; (3) finding and distributing graduate nurses equitably for maximum war needs; (4) provision of proper working conditions in terms of hours, wages, and living conditions. No one of these four points of the program can assume greater importance than the other if satisfactory progress is to be made.

Unprecedented demands upon graduate nurses from the armed forces and civilians alike make it necesasry to provide a reservoir of potential graduate nurses by increasing the number of students in schools of nursing. Taking cognizance of the seriousness of the situation, Congress made available on July 1, 1941, the first federal aid for nursing education. The sum of $1,250,000 was appropriated for this purpose to the U. S. Public Health Service. Later a deficiency of $600,000 was granted, and on July 1, 1942, the appropriation was increased to $3,500,000.

The 1943 goal of 65,000 new students in schools of nursing is an increase of 10,000 over the 1942 goal. An analysis of the spring classes indicates that this goal is not being met. Actually, the 65,000 quota for new students represents the present training facilities of schools of nursing rather than the true needs of the country. If

* Founded on a paper presented before the Public Health Nursing Section of the American Public Health Association at the Seventy-first Annual Meeting in St. Louis, Mo., October 27, 1942.

schools were able to handle the number of new students necessary to meet nursing shortages, the quota would be set at 84,000 for the year beginning July 1, 1943.

What are the bottlenecks to student enrollment?

One is public understanding. Here is a rich field for the public health nurse in her contacts with the lay public. You, better than anyone else, can help prospective students to overcome parental objection.

Monetary rewards are also a major problem. If college and high school girls can go immediately into war work at a good salary, why should they spend two to three years in nursing without salary except in the form of living expenses? To counteract this situation, we have tuition scholarships available through the U. S. Public Health Service programs, and the National Nursing Council for War Service is raising a large National Scholarship Fund. However, it may be necessary to go further and provide some sort of reimbursement to students preparing for war nursing.

We face also the question of accelerated courses. Here again we have bottlenecks—first, in our resistance to the idea. Perhaps if we study carefully the recommendations prepared by the National League of Nursing Education and see how acceleration can be effected soundly, our resistance will break down. The National Nursing Council for War Service recommends that for high school students, theoretical courses in nursing be completed in 30 months, and for college students in from 24 to 28 months, depending on their backgrounds and achievement.

Suppose we find and bring back into service every graduate nurse; suppose we meet our quotas for student nurses; even that will not be enough! We must develop an active program for preparing and employing auxiliary workers. This is chiefly a problem for each local hospital and health agency. Nationally, the program for volunteer nurses' aides is administered by the American Red Cross in coöperation with the Office of Civilian Defense. Here again, public health nurses are in a strategic position to awaken public interest and to encourage agencies to plan for the wise use of these available helpers.

With the realization that competition from industry and uniformed military auxiliaries is making our quotas increasingly difficult to reach, many members of the nursing and medical profession have presented suggestions for a remedy. These have gone through the mill of committee meetings. The outcome has been the Student War Nursing Reserve, which was approved by the Health and Medical Committee on January 26, 1943, submitted to the U. S. Public Health Service, and is now being considered by Congress in the form of the Bolton Bill.

This plan attempts to meet the competition in two ways, namely, by providing a new appeal and by financial rewards. The appeal is in the setting up of a distinctive corps with rank, insignia, and, possibly, street uniforms. The financial rewards include maintenance, tuition, and a modest monthly stipend for personal expenditures. The proposal is that the government share with the schools of nursing in these costs.

It is important to mention that the Student War Nursing Reserve Plan includes provision for the acceleration of the basic course to either 24 or 30 months. This leaves each school of nursing free to make such plans for acceleration as fit into its local situation. Whereas acceleration presented a difficult adjustment at first to nurse educators, the swift change in public psychology, in educational practices in other fields and in the course of the war will undoubtedly win many schools

of nursing over to instituting the fastest and soundest type of acceleration consistent with the proper care of patients. Where state laws permit, the nurse who has completed her theory might be graduated. She can then apply for a full-time job in the military or appropriate civilian services. If she has omitted certain specialties in her accelerated program, and cannot graduate, some plan should be worked out for her to make up these deficiencies when the war is over.

For students in their senior year who have completed their theory, it is proposed to arrange affiliations in Army, Navy, governmental and civilian hospitals upon the approval of the parent school. It is further proposed that these students, known as "cadet nurses," receive a modest stipend and in addition, because it will be necessary for them to live outside of the hospital, receive from the hospitals the difference up to possibly three-fourths of the salary of a graduate nurse. In these proposals, there is frank admission that student nurses serve while they are learning.

Letters pour in to government offices protesting that many other types of students are paid by the government for their education, whereas nurses give service while learning, pay a tuition, and get no wage. Let us once and for all differentiate between nursing education and nursing service to patients. For the latter, let us agree that the student nurse be paid, and come to a conclusion as to whether the government, the hospitals, or both should foot the bill.

Greater use of auxiliary workers appears to be the only immediate solution to the problem of overcoming the lack of facilities for training additional new students. As a pattern for this phase of the program we have the pioneer work of the American Red Cross, together with the recently developed activities of the Office of Civilian Defense. Suggestions for making the best use of volunteer participation are to be found in *Volunteers in Health, Medical Care and Nursing*, which may be procured from the Office of Civilian Defense, Washington, D. C.

Before a health department or hospital expands its use of auxiliary workers or volunteers, a critical analysis should be made of jobs done by professional workers for the purpose of ascertaining what duties can be delegated with safety to non-professional people. Agencies that have not made such studies and allocations of jobs are urged to do so immediately.

Reports are still being received which show that graduate nurses in some hospitals are serving trays, filling water glasses, and cutting flowers. In some health departments, graduate nurses trained at considerable expense in the specialty of public health, consume precious time and skill in doing clerical work, making dressings, and serving as receptionists. Critical nursing shortages cannot be met if such waste of nurse power continues.

To supply and distribute graduate nurses equitably for maximum war needs, both military and civilian, we need first to have in each community some central place where the name and pertinent data about each of the estimated 400,000 nurses of the country are assembled. In 1941, our national survey reported some 300,000 graduate nurses—one bottleneck was revealed when it was found that some 100,000 nurses, mostly those retired or inactive—did not reply. That was before Pearl Harbor. In January, 1943, a new post card survey was undertaken by the U. S. Public Health Service working with the national, state, and local Nursing Councils for War Service.

Concurrent with a survey of available supply, should go a study of the

nursing needs in the community. For this purpose, the National Nursing Council for War Service has published *A Guide to the Distribution of Nursing Service During War*. Has your local nursing council used this guide? If not, that is a bottleneck. Of what good is to know where the nurses are unless we know where they must be used? We know that the armed forces will need 66,000 nurses by the end of 1944. We know their needs may go far beyond that number and that they have priority. We know also that government hospitals and public health services, supplied through the U. S. Civil Service Commission, need several thousand nurses. How can these demands be met, and at the same time maintain a reasonable, local, civilian nursing strength? Part of the answer is for each locality to analyze the total nursing situation, to eliminate all duplications, promote economies of nursing time, and utilize to the fullest auxiliary nursing personnel.

It is urgent that we think also of the nursing needs of the new communities and new industries arising out of the war situation. Many of them have no organized care of the sick; some may have as yet no health departments. In nursing we have well accepted patterns for organizing, administering, and financing local nursing service. Each state Nursing Council for War Service should work with its state health department in planning for a proper distribution of nursing service wherever it is needed.

Then comes a tough problem—that of fitting the right nurse to the right war job. For this, the National Nursing Council for War Service has issued *Priorities for Nurses*. Have you read it? If not, that is a bottleneck.

To put these priorities into effect is now our major problem. We are doing everything we can to make the voluntary system work. But the National Nursing Council feels the need for whatever financial assistance, moral suasion, and authority the government has, and recommended that a Nursing Supply and Distribution Unit be set up under the War Manpower Commission. The purpose of the Unit, as the name implies, is:

1. To determine the availability of nurses for service in the war emergency.
2. To aid in the equitable distribution of nurses so that the nursing needs of the armed forces and of civilians will be adequately met. This distribution will be *on a voluntary*, not a compulsory, basis.

Finally, we come to the fourth point of the program—that of good working conditions for students, graduates, and auxiliaries. Civilian hospitals are now confronted with a new type of competition, for the Army and Navy pay bill provides nurses with $150 a month. For some time, the Civil Service Commission has paid junior nurses $1,620 a year and staff nurses $1,800. Government salaries for nursing are thereby setting a precedent for the private hospitals to consider as one factor in attracting and maintaining staff.

Hours of work, incentives for advancement, provision for sickness and old age retirement, opportunities for recreation, appropriate living quarters, and good food are some of the other requirements of good personnel policies.

Just one word about the housing of nurses. Emphasis is being placed on letting faculty and senior students live outside of the institution in the community. What we need increasingly is the community viewpoint with regard to nursing. We need to see the patient in relation to his family and his environment. But try as we may to develop that point of view, residence in dormitories seems to have blinded many of our best and most promising faculty and students. The housing shortage may be a blessing in disguise, for living in the community will undoubtedly give

nurses a change in scenery, get them away from rehearsing the day's professional events, and broaden their interest in community activities.

Perhaps one of our major bottlenecks is that we have let nursing be divided into too many tight compartments. Today we must see nursing as a whole. The best way to do this is to lend every support to our state and local Nursing Councils for War Service. Through them should come the answers to the distribution of graduate nurses, the increase in the supply of students, and the use of auxiliaries. Through them you make your contacts with the National Nursing Council for War Service and the government's Subcommittee on Nursing. Through them, you may show what leadership public health nursing is able to exert in wartime.

Epidemiology of Pneumococcus Pneumonia

A Study, Including Bacteriological and Serological Observations in a Rural Community during a Season of High Incidence *

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BETWEEN January 11 and May 1, 1940, a study was made of the incidence of pneumococcus infection in a sample population in Northville, Fulton County, N. Y. Northville is a relatively isolated village which, at that time, had a population of 1,111. Just prior to the start of the investigation an unusual incidence of Type 1 pneumococcus pneumonia had been noted in this particular vicinity (see Table 1, A and B).

The sample population was random on a geographical basis, alternate households within the village being enrolled for study. That the sample was well selected is borne out by close correlation in sex and age distribution between it and the population of the village at large as recorded in the 1940 census. The group was surveyed 4 times in all. The first survey, during which the enrollment was made, con-

TABLE 1

A

Pneumonia Cases in Fulton County and Northville

Year *	Number of Reported Cases	
	Fulton Co.	Northville
July 1, 1936–June 30, 1937	174	6
July 1, 1937–June 30, 1938	124	2
July 1, 1938–June 30, 1939	164	6
July 1, 1939–June 30, 1940	151	12
July 1, 1940–June 30, 1941	151	5
July 1, 1941–June 30, 1942	142	8

B

Pneumonia Cases Occurring in Northville from July 1, 1939 to June 30, 1940

Age	Sex	Date of Onset	Pneumococcus Type
62	M	8– 7–39	10
83	M	12– 8–39	1
51	F	12–15–39	1
49	M	1– 1–40	1
69	F	1–11–40	16
57	M	1–25–40	1
31	M	2– 1–40	1
21	M	2– 4–40	7
78	F	2–14–40	1
8	M	3–17–40	1 & 19
76	M	4–13–40	16
5	M	4–24–40	1

* The figures are given for July to July so that all the cases that occurred in any one "pneumonia season" will appear together.

* Presented before the Epidemiology Section of the American Public Health Association at the Seventy-First Annual Meeting in St. Louis, Mo., October 29, 1942.

sumed approximately 6 weeks (January 11–February 18). Subsequent surveys were accomplished in 3–4 weeks each (February 19–March 13; March 14–April 2; April 3–May 1, respectively). Seventy-eight households comprising 271 individuals were enrolled in the initial survey. Seventy-four households with 259 individuals remained under observation throughout the study period.

At the first interview, identifying data were obtained for each member of the household and further facts of possible significance such as general health, known contact with pneumonia, and gregarious activities were noted in detail for the 30 day interval immediately preceding the interview. At each subsequent survey these data were brought up to date.

Also, at each survey, cultures were made from the pharynx and nasopharynx of the individuals in the study group. One swab was passed thoroughly over the pharyngeal wall and tonsils or tonsillar fossae. Another was introduced through each nostril into the nasopharynx until it touched the posterior nasopharyngeal wall. In this position it was rotated gently against the membranous surface. Both swabs were combined in a tube of blood broth and incubated at the field laboratory which was set up in the central school in Northville. In no case did an interval of more than 3 hours elapse between culture and incubation. This laboratory was equipped and staffed to examine the cultures for the presence of pneumococci of all types. Whenever these microörganisms were isolated they were typed according to the Cooper classification.

The details of the bacteriological technic briefly were as follows:

Culture media included (1) beef infusion broth with 1 per cent dextrose and 5 per cent horse blood, (2) beef infusion broth with proteose peptone and 0.02 per cent dextrose, and (3) blood agar plates. After the blood broth cultures had been incubated for approximately 6 hours at 35° to 37° C., a mouse weighing from 18 to 22 gm. was inoculated intraperitoneally with 0.5 ml. of the culture, and a blood agar plate was streaked. Mice that lived overnight were subjected to peritoneal puncture, and the aspirated exudate was examined by the Neufeld technic with Type 1 serum only. Mice that died were autopsied and the peritoneal exudate was examined for all types directly by the Neufeld technic. In addition, the exudate and heart blood were cultured on blood agar which was then incubated for 18 to 24 hours. If the type had been previously determined, the typing was confirmed with the homologous anti-serum by the examination of a suspension of colony fishings picked from the plate; otherwise a complete examination was made to determine the type. Whenever the examination of colonies which were morphologically characteristic of pneumococci failed to reveal a type, solubility tests were undertaken with a 1 per cent solution of sodium desoxycholate and all soluble strains were saved for further study at the central laboratory in Albany. Mice that lived were sacrificed and autopsied approximately one week after injection, and the peritoneal fluid and heart blood were examined as described. The possibility of the occurrence of more than one type of pneumococcus was always borne in mind.

During the second survey and again in the fourth, blood specimens were obtained from a large number of the study group. These specimens were analyzed by mouse protection tests for Type 1 pneumococcus antibodies.

One-tenth ml. of serum was tested in white mice with different doses of a highly virulent 16 hour broth culture of the standard strain. The minimum lethal dose was determined in each test according to the standard method, and the estimate of the protective activity was based on similar results in at least two tests.

During the study period 7 cases of pneumococcus pneumonia developed in the Northville area. These were made the subject of separate investigation. Three of these cases occurred among households enrolled in the study group. However, only the culture results obtained at the regular surveys are in-

TABLE 2

Frequency of Types of the Pneumococcus Recovered from the 267 Individuals of the Study Group

Result of Culture	*Individuals*	*Per cent of Total*
Pneumococci not recovered	100	37.5
Pneumococci recovered	167*	62.5
Type 1	24	9.0
2	6	2.2
3	24	9.0
4	5	1.9
5	..	...
6	11	4.1
7	4	1.5
8	7	2.6
9	2	0.7
10	2	0.7
11	18	6.7
12	..	...
13	9	3.4
14	11	4.1
15	3	1.1
16	7	2.6
17	2	0.7
18	7	2.6
19	32	12.0
20	4	1.5
21	6	2.2
22	5	1.9
23	6	2.2
24	2	0.7
25	3	1.1
26	..	...
27	1	0.4
28	2	0.7
29	10	3.7
30	..	...
31	8	3.0
32	1	0.4
Unclassified	32	12.0

* Each type found in a single individual is tabulated separately, making a total of 254 strains of pneumococci among 167 individuals positive for pneumococci.

cluded in the analysis of the carrier status of the sample population. Thus, although there were three known Type 1 cases in the study group none of them happened to harbor Type 1 pneumococci at the time of survey and these three therefore do not appear in the tables concerned with the incidence of pneumococcus infection in the sample population as determined by culture survey technic.

As the term "pneumococcus infection" is used in this paper, it denotes the presence of pneumococci detected as the result of pharyngeal or nasopharyngeal culture or sputum examination, regardless of whether or not the individual concerned was a pneumococcus carrier in the usual restricted sense of the word, or a case of pneumococcus pneumonia.

Of the 267 individuals from whom cultures were taken, 248 of them at all four surveys, 167 (62.5 per cent) were found to be pneumococcus carriers at some time (Table 2). Pneumococcus Type 19 occurred in 12 per cent, Types 1 and 3 in 9 per cent, and Type 11 in 6.7 per cent of the study population. One hundred individuals carried only one type. Sixty-seven (40 per cent) of those positive carried more than one type; 52 had 2 types; 12, 3 types; 1, 4 types; and 2, 5 types simultaneously.

In general, types detected in a given individual did not show much tendency to persist (Table 3). Of 254 strains recovered in the study group, 198 (78 per cent) were recovered only once, 48 (19 per cent) twice, 7 (3 per cent) three times, and only 1 strain four times from the same individual. Types encountered more than once in a given individual occurred twice as frequently in consecutive cultures as they did intermittently.

The proportion of pneumococcus carriers of all types detected was con-

TABLE 3

Repetition of Same Type Pneumococcus in the Same Individual

Type	*Total*	*Number of Times Recovered per Individual* *		
		2	*3*	*4*
All Types	254	48	7	1
1	24	7	..	..
3	24	5	1	..
6	11	3	2	..
8	7	..	2	..
11	18	7	1	..
14	11	2	..	..
16	7	2	..	..
19	32	8	..	1
20	4	1	..	..
29	10	5	1	..
31	8	3	..	..
Unclassified	32	5	..	..

* Whether recovered in successive cultures or not.

TABLE 4

Distribution of Most Common Types of Pneumococci by Age and Sex

Age and Sex	Total Number Individuals Cultured	Positive for Pneumococci: Total Number	Positive for Pneumococci: Total Per cent of Total Cultured	Number by Type: 1	3	11	19	All Other Types
Males	122	86	70.5	9	16	12	19	38
Under 10	26	22	84.6	4	2	5	7	7
10 to 19	14	10	71.4	1	1	2	5	2
20 and Over	82	54	65.9	4	13	5	7	29
Females	145	81	55.9	15	8	6	13	42
Under 10	28	16	57.1	11	1	2	2	2
10 to 19	21	11	52.4	..	2	4	1	5
20 and Over	96	54	56.3	4	5	..	10	35
Total	267	167	62.5	24	24	18	32	80
Under 10	54	38	70.4	15	3	7	9	9
10 to 19	35	21	60.0	1	3	6	6	7
20 and Over	178	108	60.7	8	18	5	17	64

TABLE 5

Distribution of Positive Cultures According to the Most Common Types by Weeks Throughout Study Period

Week Beginning	Total Number Cultures	Total Number Positive	Per cent Positive	Number by Pneumococcus Type: 1	3	6	11	19	29	Unclassified	All Others	Per cent of Total Cultures by Type: 1	3	19
Total	1,061	287	27.0	36	34	20	28	43	18	38	120	3.4	3.2	4.1
Jan.														
7	28	8	28.6	..	2	..	..	2	2	1	3	...	7.1	7.1
14	35	9	25.7	1	1	..	1	3	..	4	..	2.9	2.9	8.6
21	46	11	23.9	2	..	..	..	1	..	1	8	4.3	...	2.2
28	46	12	26.1	..	1	..	4	3	..	1	4	...	2.2	6.5
Feb.														
4	58	13	22.4	..	2	2	1	..	1	1	8	...	3.4	...
11	70	17	24.3	1	1	3	..	3	..	1	10	1.4	1.4	4.3
18	60	16	26.7	..	1	..	..	..	1	3	11	...	1.7	...
25	55	6	10.9	2	..	1	..	1	1	..	2	3.6	...	1.8
Mar.														
3	66	40	60.6	6	4	3	8	6	3	3	16	9.1	6.1	9.1
10	73	15	20.5	4	1	3	..	3	..	1	7	5.5	1.4	4.1
17	99	36	36.4	4	2	2	4	9	4	7	14	4.0	2.0	9.1
24	95	14	14.7	3	..	..	4	..	2	2	6	3.2	...	...
31	98	15	15.3	1	4	3	1	3	..	3	1	1.0	4.1	3.1
Apr.														
7	106	23	21.7	1	2	..	3	6	4	3	6	0.9	1.9	5.7
14	91	38	41.8	7	11	3	..	2	..	5	21	7.7	12.1	2.2
21	14	8	57.1	3	2	..	1	1	..	1	..	21.4	14.3	7.1
28	21	6	28.6	1	..	..	1	..	..	1	3	4.8	...	...

TABLE 6

Incidence of Known Acute Upper Respiratory and Gastrointestinal Illnesses Among Pneumococcus Carriers and Non-carriers During Entire Study Period

Infection Status	Total Number Individuals Cultured	Number of Cases of Illness: Upper Respiratory	Number of Cases of Illness: Gastrointestinal	Per cent of Total Number Cultured: Upper Respiratory	Per cent of Total Number Cultured: Gastrointestinal
Pneumococcus Not Recovered	100	78	13	78.0	13.0
Pneumococcus Carrier	167	134	19	80.2	11.4
Total	267	212	32	79.4	12.0

sistently higher for males than females in all age groups (Table 4). This is compatible with the findings reported by Gundel and Okura[1] and by Ardelean.[2]

Of a total of 1,061 cultures in the sample group 287 (27 per cent) were positive for pneumococci (Table 5). For the first 7 weeks of the study the proportion of positive cultures remained quite constant. The subsequent irregularity and the high peak of the 9th week during which 60.6 per cent of the cultures taken were positive, remains without a satisfactory explanation. All controllable factors were apparently kept constant. No single pneumococcus type assumed predominance. The age distribution of those cultured during this week was essentially the same as for the total study group. There was no relation to particularly unfavorable weather conditions. The incidence of acute respiratory infection did not change appreciably, nor was there any other form of illness prevalent, with the exception of a small number of cases of an acute gastrointestinal disturbance the occurrence of which, however, seemed to bear no constant time relationship to the incidence of pneumococcus infection. Furthermore, it will be seen from Table 6 that there appears to be no correlation between the occurrence of either acute upper respiratory infection or gastroenteritis and the incidence of pneumococcus infection in the study population as a whole.

The incidence of pneumococcus infection of all types encountered in households at each of the four surveys does not show appreciable variation (Table 7) but Type 1 appears to have been somewhat more prevalent after the first survey.

Seventy (89.7 per cent) of the 78 households in the sample population harbored one or more infected persons, in this instance all carriers, at some time during the study (Table 8). In approximately 20 per cent of these the same type occurred simultaneously in two or more individuals and in 26 per cent the same type was recovered at

TABLE 7

Households Found to Have One or More Members Infected with Pneumococci of Any Types and Type 1 According to Survey

	Total		Households		Per cent of Households	
			Type 1		Type 1	
Survey	Households	Individuals	Pneumococcus Present	Pneumococcus Present	Pneumococcus Present	Pneumococcus Present
1st	78	257	39	2	50.0	2.6
2nd	75	253	41	9	54.7	12.0
3rd	74	253	35	7	47.3	9.5
4th	74	248	43	7	58.1	9.5

TABLE 8

Incidence of Pneumococcus Infection among Households Composed of Adults Only and Households Composed of Adults and Children

		Number Positive		Per cent Positive	
Composition of Household	Total Number Households	All Types	Type 1	All Types	Type 1
Total Households	78	70	14	89.7	17.9
Adults Only	37	30	2	81.1	5.4
Adults and Children	41	40	12	97.6	29.3

different surveys. Type 1 was encountered in 14 (17.9 per cent) of these 78 households.

Recent studies of pneumococcus carriers by Stebbins,[3] Mackenzie,[4] and Smillie,[5] have indicated that children seem more susceptible to infection than adults, and it has been further shown by one of us[6] that they play an important rôle in the dissemination of pneumonia. The relatively small difference in the incidence of pneumococcus infection of all types in households with or without children of school or preschool age becomes marked if Type 1 is considered alone (Table 8). This type occurred in 29.3 per cent of the households with children and in only 5.4 per cent of those composed exclusively of adults of 20 years or older. This observation is consistent with the finding already mentioned that the major portion of those with Type 1 infections are under 10 years of age. The numbers of children of school and preschool age were too small, however, to permit separation, as was attempted by Mackenzie,[4] of the effect of age *per se* from the effect of school contacts as a factor closely linked with age.

As stated, at each survey careful inquiry was made into the activities and close personal contacts of each subject. In the following analysis contacts are defined as "household" to mean persons residing permanently with the family group in question, and as "extra-household" to mean individuals who were not in residence but had a minimum contact of a close nature with the person in question on the average of at least 1 hour a week.

As a collateral study to that of pneumococcus carriers in the sample population, cultures and contact histories were taken from all household and discoverable extra-household contacts, as defined, of known cases of pneumonia in the town and its immediate environs. These data were collected on 49 contacts of 8 cases of Type 1 pneumococcus pneumonia, and among these 49, 10 persons (20.4 per cent) were found infected with Type 1 on immediate or subsequent culture (Table 9). This group, while not strictly comparable,

TABLE 9

Incidence of Type 1 Pneumococcus Infection among Contacts of Known Type 1 Cases or Carriers and Individuals with No Known Contact According to Age Group and Type of Contact

Age and Type of Contact	Number of Individuals[1]			Number Positive For Type 1 Pneumococcus		
	Case Contacts	Carrier Contacts	No Contact Reported	Case Contacts	Carrier Contacts	No Contact Reported
Under 15						
Household	10	14	..	4	6	..
Extra Household	7	8	..	2	2	..
No Contact Reported	..	..	48	..	..	9[2]
15 and Over						
Household	16	27	..	2	4[3]	..
Extra Household	16	7	..	2	1	..
No Contact Reported	..	..	150	..	..	4
Total	49	56	198	10	13	13

[1] Three individuals had contact with both a case and a carrier, but each of them appears only once in this table, their position being determined by the nature of the contact known to have occurred first. On this basis, 2 are in the case contact group and 1 in the carrier contact group.

[2] This figure is comprised of 7 pneumococcus carriers and 2 primary cases which occurred during the course of the study in the random population sample. One carrier who gave a history of contact with one of these 7 but not with any of the primary carriers or cases is not included in the 9 positives but is in the total 48.

[3] The third case of pneumococcus pneumonia occurring in the sample population appears here.

had a rate of contact infection no greater than that for Type 1 infection among the household and extra-household contacts of 11 known index Type 1 carriers. There were 56 contacts of these carriers among whom 13 (23.2 per cent) were found to be infected in the course of the culture surveys subsequent to their initial known contacts.

Both of these rates stand in sharp contrast to the incidence of Type 1 infection in the 198 members of the study population who had no known contact with either case or carrier of Type 1 and among whom 13 (6.6 per cent) became infected either as a case or carrier of this type. It is not presumed that this latter group was free of contact but it does seem reasonable to assume that the duration and intimacy of contact was probably much less than that in the other two groups. These findings tend to corroborate the view that the duration and intimacy of contact with infected persons is an important factor in the spread of pneumococcus infection.

The records of previous known pneumococcus pneumonia in Northville are unfortunately incomplete, but it is known that Type 1 pneumonia had occurred at least once in 1935 and twice in 1938. Pneumonia due to Types 3, 4, and 5 had also been reported during the 5 years prior to the study. In so far as can be determined, however, there had been no occurrence of any of these types beyond that consistent with their endemic levels.

It is unfortunate that no baseline study could be made of the blood antibody levels of the population prior to the onset of the high incidence of Type 1 pneumonia that occurred during the 1939–1940 season. However, if the general observations of Finland [7] and the studies of Felton [8] on 281 normal persons can be accepted as reasonably applicable to Northville, the levels of protective antibody found upon titration of the sera of 161 persons from the Northville study group (Table 10) indicate either that the population of Northville had previously had considerable exposure to Type 1 infection or that the infection was currently far more prevalent than suggested by the 9 per cent incidence rate for Type 1 pneumococcus in the sample population obtained by culture methods.

Of 161 individuals studied, 58 (36.0 per cent) showed protective antibodies in the blood at significant levels of 100 m.l.d. or greater. Forty-four (27.3 per cent) showed levels of 1,000 m.l.d. or greater, which suggests the likelihood of relatively recent type specific immunizing experience. Such a possibility seems plausible inasmuch as 2 cases of Type 1 pneumococcus pneumonia and 1 of Type 1 pneumococcus meningitis were known to have occurred just beyond the environs of the village, and 3 cases of Type 1 pneumonia had occurred within the village limits during the 6 weeks preceding the start of the survey.

One hundred and forty-five individuals were tested twice, the first

TABLE 10

Protective Antibodies against Type 1 Pneumococcus as Encountered in Study Group and in Normal Group Reported by Felton *

Group	Number Individuals Studied	Number Individuals with Protective Antibodies			Per cent of Total Studied		
		10 m.l.d. or Greater	100 m.l.d. or Greater	1,000 m.l.d. or Greater	10 m.l.d. or Greater	100 m.l.d. or Greater	1,000 m.l.d. or Greater
Felton	281	43	..	..	15.3	....	....
Northville	161	76	58	44	47.2	36.0	27.3

* Felton, Lloyd D. *Public Health Reports*, 53:1855 (Oct. 21), 1938.

serological survey being made during the second culture survey and the second serological survey during the fourth culture survey. The trend of antibody level from the first survey to the second suggests that the basic level of exposure remained fairly constant during the study period (Table 11). Nineteen (13.1 per cent) of the sera showed an increased titer, while 26 (17.9 per cent) showed a decrease. Among the 11 persons twice tested who were known to have or have had Type 1 pneumococcus infection, 4 increased and 4 decreased between the two surveys.

There were 12 known carriers and 2 cases of clinical Type 1 pneumonia among the 161 individuals who had serological examinations. All of these had an antibody titer of 100 m.l.d. or more (Table 12). Of 48 individuals who had a history of contact with known Type 1 carriers or cases, 27 (56.3 per cent) had a titer of 10 m.l.d. or less, and 21 (43.8 per cent) 100 m.l.d. or more. All of these people had known exposure and it is reasonable to assume that many of them became carriers at some time even though the infection was not demonstrated bacteriologically. This assumption is borne out by the considerable proportion (43.8 per cent) who had mouse protective antibody levels of 100 m.l.d. or more. In contrast to these are the 99 individuals who had no known contact with a source of infection. As previously stated it is not assumed that

TABLE 11

Protective Type 1 Pneumococcus Antibodies According to Titer among Individuals Tested during Second and Fourth Culture Surveys

Antibody Titer in m.l.d. at First Test	*Number Tested Once Only*	*Number Tested Twice*	*Antibody Titer in m.l.d. at Second Test of Same Individuals*						
			0–1	*10*	*100*	*1,000*	*10,000*	*100,000*	*1,000,000*
0–1	11	84(2)	74	6	..	1(1)	2(1)	1	..
10	1	15	8	3	4	..	..	..	..
100	1(1)	13(2)	..	3	6(1)	3(1)	1(1)	..	..
1,000	3	7	..	1	4	2	..	..	..
10,000	..	19(4)	..	..	1(1)	7(2)	10(1)	1	..
100,000	..	5(2)	..	..	..	..	1(1)	4(1)	..
1,000,000	..	2	..	..	..	..	..	1	1
Total	16(1)	145(11)	82	13	15(2)	13(4)	14(4)	7(1)	1

NOTE: Figures in ( ) indicate known carriers of Type 1 pneumococcus.

TABLE 12

Relation of Antibody Level to History of Contact with Pneumococcus Infection

Status of Individual	*Total Individuals*	*Maximum Antibody Titer*			
		Number of Individuals		*Per cent*	
		10 m.l.d. or Less	*100 m.l.d. or More*	*10 m.l.d. or Less*	*100 m.l.d. or More*
Cases or carriers	14	..	14	....	100.0
Known contact	48	27	21	56.3	43.8
No known contact	99	76	23	76.8	23.2
Total	161	103	58	64.0	36.0

TABLE 13

Relation of Protective Type 1 Pneumococcus Antibodies to Known Pneumococcus Infection

Maximum Titer in Individuals in m.l.d.	Total Individuals Tested *	Number Having Known Pneumococcus Infection			Per cent of Total Infected		
		Total	Type 1	Other than Type 1	Total Pos.	Type 1	Other than Type 1
0-1	85	58	..	58	61.6	0.0	70.4
10	18	11	..	11			
100	14	11	2	9			
1,000	14	10	2	8			
10,000	21	14	6	8	38.4	100.0	29.6
100,000	7	6	4†	2			
1,000,000	2	2	..	2			
Total	161	112	14	98	100.0	100.0	100.0

* Highest titer when sera were obtained on both surveys.

† Two Type 1 cases are represented here.

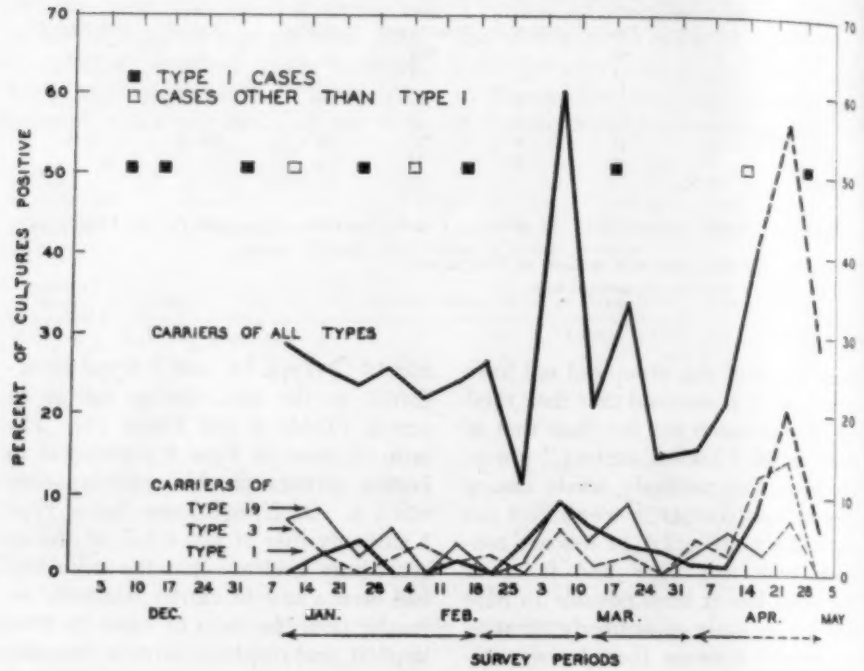
the members of this group did not have contact but it is assumed that their total contact experience was less than that of the so-called "known contact" group. The protective antibody levels among those without contact in which 76.8 per cent had only 10 m.l.d. or less are consistent with this view and it seems likely that had it been possible to have used a finer scale of antibody titration the contrast between the "known contact" and "no known contact" groups would have been greater.

There was little evidence that infection with a heterologous type of pneumococcus appreciably increases the antibody titer for Type 1 (Table 13). All individuals with Type 1 infection found upon culture showed a maximum protective Type 1 antibody titer of 100 m.l.d. or more whereas but 29.6 per cent of the persons found infected with types other than Type 1 showed maximum protective Type 1 antibody titers of 100 m.l.d. or more, and there is ample reason to believe that some of this latter group carried undetected Type 1 infection.

As has already been seen, no single pneumococcus type assumed preponderance at any time (Table 5 and Chart 1). Seven cases of pneumococcus pneumonia (3 Type 1; 1 mixed, Types 1 and 19; 2 Type 16; and 1 Type 7) occurred in the area during the study period (Table 1 and Chart 1). The ratio of cases of Type 1 pneumonia to known carriers of this microörganism was 1:8. Or, if we assume that a Type 1 antibody titer of 100 m.l.d. or greater constitutes evidence that the individual had been a case or carrier relatively recently, then the ratio of cases to these implicit and explicit carriers becomes 1:19. In previous studies of Type 1 pneumococcus distribution in rural areas at Treadwell [3] and Schuyler Lake [4] 2 cases were noted to 32 known carriers (a ratio of 1:16) during a 2 months period in the former area, while in the latter, which probably is not strictly comparable, there were 5 cases to 63 carriers (a ratio of 1:13) for the entire observation period of 14 months. The question of lack of comparability here resides in the possibility that there was selection of individuals for repeated culture on the basis of their known exposure, whereas the Northville data are based upon the results of the four surveys only. The fact that the figures involved are small in every instance, that the seasons and time intervals are not identical, and that one case more or less would make an appreciable difference in the case-to-carrier ratio seems to

CHART 1

SHOWING DISTRIBUTION OF POSITIVE CULTURES AND THREE MOST COMMON TYPES BY WEEK OF CULTURE



provide sufficient basis for the relatively small differences in these 3 ratios. They constitute interesting refutation of the prevailing opinion, apparently unjustified, that there is a marked tendency for Type 1, 2, or 5 pneumococcus infection to incite pneumonia in a normally susceptible population rather than to remain harmlessly localized in the upper respiratory tract.

CONCLUSIONS

1. The spread of pneumococcus infection in a community, in so far as it is dependent on person-to-person contact, seems to be governed equally as much by contact with healthy carriers as by contact with the clinical disease.

2. Consideration of the case-to-carrier ratio in this and prior similar studies suggests that the so-called invasive types of the pneumococcus, of which Type 1 is the prime example, are probably not as invasive as hitherto thought, and perhaps no more so than several other types less commonly encountered.

3. In the presence of an abnormal incidence of pneumococcus infection, large numbers of people may acquire type-specific antibodies at what may be assumed to be significant, and in some cases perhaps even protective, levels without having had any signs or symptoms of clinical disease.

4. The immunological data suggest that the culture methods in current usage do not give an accurate picture of the prevalence of pneumococcus infection in a given population group.

5. Further evidence appears in this study to favor the now generally accepted view that healthy carriers occur with appreciably greater frequency in the younger age groups. Whether this is due to actual differences in susceptibility at the different age levels, or to the gregarious peculiarities of the life

of the younger individuals could not be ascertained.

6. The apparently greater tendency of males to become carriers of pneumococci of all types as noted here has seldom been recorded previously in the literature. The numbers in the present study are too small for the figures to be conclusive, but should this difference prove to be a true one, it would be of particular interest in the light of the recognized greater incidence of clinical pneumococcal disease in males.

7. Although the occurrence of type-specific pneumococcus infection in a given population is a prerequisite to the spread of clinical pneumonia of the same type, the presence of such infection is not the sole determining factor in the selection of those individuals who develop the clinical disease. The probable significance of numerous other factors such as the virulence of the invading pneumococcus and variations in host resistance, is well recognized, but a true understanding of many of them is still wanting and knowledge of the manner in which they actually operate is relatively meager.

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Improved Technic for Isolation of Dysentery Bacteria from Stools by Formaldehyde Inactivation of Bacteriophage

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DESPITE successive improvements of culture media, the laboratory diagnosis of bacillary dysentery remains unsatisfactory. Laboratory workers repeatedly fail to obtain cultures from stools of typical cases of clinical dysentery. The primary reason for this failure appears to be the age of the stool; stools cultured shortly after they are voided give better results than when culturing is delayed. A possible explanation of the extreme lability of the dysentery organisms is the presence of specific phage in the stool. The frequency of the presence of such phage has led Wheeler and Burgdorf (1941) to suggest its detection as a diagnostic procedure; this was not feasible because dysentery phage is often present also in normal stools. However, the fact that dysentery phage is of common occurrence in stools suggested that the rapid death of dysentery bacteria in stools was due to lysis. Assuming that to be the case, it would follow that an agent which would inactivate phage without injuring the bacterial cells should, when added to the stools, greatly increase the chances of isolating the causative organisms.

The work of Schultz and Gebhardt (1935) and of Kligler and Oleinik on the inactivation of phage by small doses of formaldehyde indicated that this chemical might serve the purpose. The data presented below show that the simple procedure of adding to fresh stools a concentration of formaldehyde too low to injure the cells, but sufficient to inactivate phage, resulted in a considerable increase of positive cultures.

In preliminary experiments phage was added to stools artificially inoculated with shigella. In 6 hours the inoculated organisms could no longer be recovered. However, this killing effect was inhibited or prevented by the addition of an appropriate concentration of formaldehyde. The following is a typical experiment: 10 gm. of stool from a normal individual, proved not to contain phage, were emulsified in 10 ml. of saline and infected with 2 drops of a broth culture of Shiga dysentery bacteria. The stool was divided into two portions. To one part phage was added at the rate of 0.5 ml. of broth to each gm. of stool. To the other part no phage was added. Each sample of stool was then subdivided into equal parts and various concentrations of formaldehyde were added. Cultures were made immediately and 6 and 24 hours later; during the interval the stool samples were kept at room tem-

peratures. Cultures were made on MacConkey plates and suspicious colonies isolated and identified, in the usual manner. The results are summarized in Table 1.

TABLE 1

	Cultures Made after (Hours)		
	0	6	24
Without phage			
Infected stool	+	+	+
Infected stool and formaldehyde			
1:20,000	+	+	..
1:10,000	+	+	..
1: 7,500	+	−	..
1: 5,000	+	−	..
With phage			
Infected stool	+	−	−
Infected stool and formaldehyde			
1:20,000	+	−	..
1:10,000	+	+	+
1: 7,500	+	+	+
1: 5,000	+	+	−

Both Flexner and Shiga organisms survive in phage-free stools for 24 hours. Formalin in a concentration of 1:7,500 kills the organism in 6 hours. Lower concentrations have no effect. When phage alone was added dysentery organisms could no longer be recovered after 6 hours, but when phage and formaldehyde were added cultures were positive after 24 hours even in a formalin concentration of 1:7,500, presumably because part of the formalin was bound by phage.

A second type of experiment was made with dysentery stools. These fresh stools were diluted and bacterial counts made. To one portion, 1:10,000 formalin was added, the stools were kept 24 hours at room temperature, and again diluted and cultured. The counts of the two sets of plates showed practically the same number of organisms; in one fresh stool the number of Shiga bacteria was 173×10^4, and when plated after 24 hours with formalin the count was 170×10^4. The concentration of formalin used had no lethal effect on the dysentery or other bacteria present in the stools.

The procedure was then applied to dysenteric stools sent to the laboratory for diagnosis. Only fresh stools were used in these tests. Immediately on collection they were tested for the presence of phage and divided into three parts. One part was kept as control, and to the others formalin in concentrations of 1:10,000 and 1:7,500, respectively, was added. The various samples were plated promptly on MacConkey, and again after being 6 hours and 24 hours in the laboratory.

Of the 63 fresh stools examined 47 were positive for dysentery—Flexner or Shiga. All the positive stools contained also dysentery bacteriophage. Of the untreated stools recultured after 6 and 24 hours, only 14 still yielded dysentery bacteria. Of the 63 stools treated with formaldehyde and cultured after 6 and 24 hours, 49 were positive.

Thus the formaldehyde treatment gave a higher percentage of positive stools and the stools remained postive 6 and 24 hours after they were brought to the laboratory. Because of the different consistencies of stools it was found desirable to use two formalin concentrations; when there was much blood in the stool the higher concentration gave better results.

SUMMARY

Dysentery phage is probably responsible for the rapid death of dysentery bacteria in stools brought to the laboratory for diagnostic purposes. Hence stools kept for some time before culturing give negative findings. This handicap is removed by the addition of concentrations of formalin (1:10,000 and 1:7,500) which inactivate the phage but are not lethal for the bacteria. Of 63 dysenteric stools cultured almost immediately after they were voided, 47 yielded Flexner or Shiga bacteria; cultured 6 hours later only

14 were positive. However, when the formalin was added to portions of these stools in concentrations of 1:10,000 and 1:7,500, respectively, 49 of the stools gave positive cultures after standing 6 and 24 hours respectively in the laboratory. This procedure should enhance the efficacy of laboratory diagnosis of dysentery, and under field conditions should increase the success in detecting acute and carrier conditions.

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Completeness of Birth Registration in the United States in 1940

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As many of you know, during the 1940 Census a special effort was made to test the completeness of birth registration in the United States. This test was the first conducted simultaneously for every state in the country. The plans for the test have been discussed before groups of registrars of vital statistics several times and no doubt many of you know very well the procedures that have been used in the test during the past two years. However, for the benefit of those who are not familiar with the major elements of the test, I should like to review it and indicate the results.

A test of the completeness of birth registration has many values. First, it is an indication of the efficiency of the state registration mechanism. Second, the figures resulting from such a test are of considerable value in the analysis and use of birth statistics, both for interpreting the birth rates published annually and for estimating populations. Third, a test of the completeness of birth registration indicates what proportion of the children born in a given year is missed entirely in registration of births so that there is no official record of their citizenship, age, or parentage. The importance of birth registration completeness has been pointed up considerably during the past year by the overwhelming increase in requests to state offices for certified copies of birth certificates and the flood of applications for delayed registration by persons whose births were not registered.

The 1940 test is based on a list of children born during December, 1939, January, February, and March, 1940, who were enumerated on "infant cards" by census enumerators. These cards contained certain information not available on the regular population schedules, such as exact date of birth, exact place of birth, maiden name of mother, and hospital of birth. To match against this list of children, special copies of birth certificates were obtained from each state bureau of vital statistics for all children born during the same four months. In addition, a special copy of the death certificate was secured for each child born during the four months of the test period who died during these same four months. The object of the test was to match the birth records with the infant cards and the death transcripts to determine what proportion of the children enumerated in the Census was actually registered.

All these records were sent to Washington, where, with the help of a WPA project, the preliminary processing of the records was carried out. The first step was to arrange the infant cards, birth transcripts, and death transcripts by state of birth. This meant, for the infant cards and the death transcripts, a reallocation from the state of residence at the time of the Census, and from the state of death, to the state of birth. When this was accomplished, all three sets of records had been

placed on a comparable basis by state of birth.

The second step was to alphabetize all three sets of records by surname of child. This was by far the most time-consuming portion of the test and took many months to complete effectively.

The third step involved matching infant cards and death transcripts with birth transcripts. This part of the procedure was carried out very carefully. Objective standards for matching were established before this phase of the work was begun. When the matching for a state was completed, every set of matched records was verified by a specially trained clerk to see that the standards had been maintained. By this means, we believe that the results of the test have been kept strictly comparable for every state. When the matching was completed, about 75 per cent of the records eventually matched for each state had been placed together.

The fourth step comprised the writing of 162,000 form letters, chiefly to parents, in an effort to clarify or complete the data on the remaining unmatched infant cards. The letter requested the parents to send to the Bureau of the Census certain data on their child, such as the name of the child, place and date of birth, maiden name of mother, name of father, and the name and address of attendant at birth. The replies represented an unusually high percentage of letters returned compared to the number mailed. By writing follow-up letters and letters to hospitals when no answer was received from the parents, it was possible to obtain data for about 80 per cent of the children whose birth certificates could not be located. The information given in the letters served as an accurate check on the names, places, and dates of birth of the children given on the infant cards. In many cases it was possible to go back to the files of unmatched birth transcripts with the new information obtained from the letters and find the birth transcripts for the children in question. On the other hand, if, after receiving a letter with full information, a birth transcript could not be located, it was clear that no birth record was available for that child in the file of special copies of birth certificates.

Another type of information gathered by the letters was a statement of date of birth, which indicated whether a given child was born within the four months of the test period, before the test period, or after it. With a verification of this fact from the parents or hospital of birth, it was possible to eliminate from further consideration in the test all infant cards representing births occurring before or after the test period.

The fifth step in the procedure was the tabulation of the results of the work in the Bureau of the Census. The percentage results are shown in the first column of Table 1. The asterisks indicate states which have a special problem due to race. When it is possible to do so at a later date, a race breakdown will be given for these states so that more detailed analysis of the significance of the figures may be made.

The sixth step was to take the unmatched letters from parents and copies of the unmatched infant cards and death transcripts, for which no letters had been received, to state bureaus of vital statistics for a final check in the original files. There were several reasons for this. First, there are certain limitations in matching when relatively untrained clerks match a set of records covering the entire country. The trained personnel of a state office becomes extremely proficient at locating particular records. Such clerks become familiar with unusual names and their variations in a way that newly trained personnel do not. Second, when the birth transcripts for the test were forwarded to

TABLE 1

The Percentage of the Completeness of Birth Registration in the United States by State: December, 1939, through March, 1940

Area	Percentage Shown after Check within Bureau of the Census	Percentage Shown after Check within State Bureaus of Vital Statistics	Final Percentage
UNITED STATES			92.5
Alabama *	80.0	84.2	85.2
Arizona *	71.9	83.5	84.4
Arkansas *	67.3	74.1	75.9
California	93.8	97.6	98.0
Colorado	82.2	87.9	89.8
Connecticut	94.4	....	99.4
Delaware	91.4	96.5	97.4
District of Columbia	91.1	97.3	97.9
Florida *	81.9	89.0	89.9
Georgia *	76.8	80.1	81.3
Idaho	90.1	93.9	95.0
Illinois	93.7	....	95.0
Indiana	93.0	96.0	96.5
Iowa	84.8	94.1	94.6
Kansas	92.6	94.9	95.5
Kentucky *	83.3	86.7	89.2
Louisiana *	80.8	85.4	86.1
Maine	95.1	95.7	96.1
Maryland	90.7	....	97.1
Massachusetts	....	....	98.9
Michigan	96.7	....	97.8
Minnesota	97.1	98.8	99.3
Mississippi *	81.8	88.6	89.8
Missouri	82.2	87.8	90.2
Montana	92.7	97.2	97.6
Nebraska	95.5	96.5	96.9
Nevada	87.1	94.4	96.2
New Hampshire	91.1	98.6	98.7
New Jersey	93.7	....	99.0
New Mexico *	62.6	81.4	86.4
New York	94.0	....	98.9
North Carolina *	83.2	84.6	86.1
North Dakota	90.1	93.4	94.7
Ohio	91.8	....	95.2
Oklahoma *	80.1	84.7	84.8
Oregon	92.6	96.5	97.1
Pennsylvania	92.2	....	97.0
Rhode Island	97.7	98.8	98.8
South Carolina *	70.5	76.4	77.6
South Dakota	91.5	94.9	95.4
Tennessee *	71.3	78.8	80.4
Texas *	80.9	....	86.5
Utah	92.8	96.6	96.6
Vermont	95.1	97.2	97.3
Virginia *	85.3	89.4	91.9
Washington	92.3	97.1	97.8
West Virginia	80.7	83.7	86.5
Wisconsin	95.7	....	96.9
Wyoming	90.2	92.2	95.6

* These states have a special registration problem due to race. Tabulations including a race breakdown will be available at a later date.

the Bureau of the Census, they were generally made only for those children born during the current month whose births were registered on time. Transcripts of certificates filed later often were not included among those sent to the Bureau of the Census. The process of transcription for the test was a special job and in many states certificates filed late were difficult to locate. As a result, when the matching in Washington was completed, the records for a number of children were actually on file in state offices but were not available for searching in Washington.

The Bureau of the Census was able to send a field agent to almost every state to assist the state registrar in

making a thorough check against his state files. In all states where indexes to the filed records were available, a search was made first through the index, then, if it seemed desirable, a further check was made through the individual certificates to locate any additional records which might not be indexed. Also attempts were made in each state to check adoption files, records from foundling homes and other similar institutions, to determine whether a child for whom an infant card or death transcript had been made was actually registered under another name due to adoption or some other reason. In those states where indexes were not available, it was necessary to do all searching through the original records after sorting the infant cards and the death certificates into an order similar to the filed birth certificates. The matched records were returned to the Bureau of the Census. The unmatched records were left in the state for a further check in the field.

After the matched records were returned to Washington, a further tabulation was made, showing the results of the state office checks. The percentage results are shown in the second column of Table 1. It may be seen that the percentages of completeness of registration for all states are somewhat higher as a result of the state office checks. These are not the final figures of the test. Further modifications were effected by the field checks conducted by each state bureau of vital statistics.

At the time of the check in state bureaus of vital statistics, it was necessary to settle the question of including in the test birth certificates filed late. It was essential to choose a date after which no birth records could be accepted for the test, for it is perfectly obvious that delayed records of birth will continue to be filed for an indefinite period after birth. It was therefore decided that birth certificates filed after July 31, 1940, would not be included in the test. This date was chosen as a reasonable one, first, because it was assumed that four months after the close of the test period would provide adequate time to secure late birth registrations for the test. Second, as the work on the test progressed and letters were written to parents, it became apparent that these letters were a strong stimulus in effecting greater completeness of birth registration. After receiving letters in which some doubt was expressed as to whether their children's births had been registered, many parents investigated and caused the certificates to be placed on file. If a deadline for receipt of transcripts of delayed birth certificates had not been set at a date prior to the time the letters were sent out, a considerable bias in the test would have resulted.

We requested that the date of filing be shown on each birth transcript forwarded to the Bureau of the Census after the state check. All those birth transcripts filed after July 31, 1940, were not counted in the test as registered births.

The seventh step in the test was the final verification and checking on each child for whom an infant card or death transcript was available but for whom no birth transcript could be located. It was proposed that local health authorities in each state attempt to locate these children to determine, first, whether the child exists, and second, why his birth was not registered. Every state conducted such a program. It raised the percentages of completeness of birth registration from 1 to 3 per cent. In cases where a letter was received from the parents giving the requested information, it was not necessary for purposes of the test actually to locate the child or do further work in the field. It is desirable, however, that the births of these children be registered as soon as possible.

An eighth step was carried out when the unmatched records, which were checked in the field by state bureaus of vital statistics, were returned to Washington. This step was a final nation-wide matching of the remaining unmatched infant cards and death transcripts against the remaining birth transcripts. This check was followed in order to eliminate, as far as possible, major errors in place of birth given on the infant cards and death transcripts. With this step completed, the essential "checking" features of the test were finished and the final tabulations were made. The final percentages are given in the third column of Table 1.

There are probably several questions in your minds about the test which I have not yet discussed: First, by what formula were the percentages of completeness computed? Second, what will happen to states whose completeness of birth registration is less than 90 per cent?

The current formula used for computing the completeness of birth registration is the same as that used by the Bureau of the Census in past tests. It is assumed that the infant cards and death transcripts, against which the birth transcripts are checked, are a representative sample of the children under 4 months of age at the time of the test. The proportion of the infant cards and death transcripts for which birth transcripts can be located, therefore, is assumed to be the true percentage of the completeness of birth registration. In other words, the formula is "the total number of birth transcripts matched with infant cards and death transcripts divided by the total number of infant cards and death transcripts received for the test." This formula is exactly the same as that traditionally used by the Bureau of the Census. It seems to be the most satisfactory method of computing the completeness of birth registration.

According to original standards, a state had to demonstrate that its registration of births was 90 per cent complete before it was eligible for admission to the birth registration area set up by the Bureau of the Census. The policy of the Census Bureau stated in 1936 still stands. At that time William Lane Austin, Director of the Census, said: "The Bureau must continue to make tests to check the completeness of registration, but the object of such checks hereafter will be to help the state with its problems of registration rather than to threaten its removal from the registration area."

State health officers and state registrars are to be congratulated on their active and effective coöperation in making possible this test of birth registration at a time when many normal activities have had to be curtailed or even dropped temporarily because of the national emergency. The special job of transcribing birth and death records for this test was an added burden. The checking in state offices was often done under great difficulty, many times with night shifts and Sunday and holiday work. It was only by sacrifice on the part of the personnel of state health offices that the fine results of this test were possible. To them goes a major share of the credit for this first nation-wide test of the completeness of birth registration.

Final results of the test reveal that in 1940 birth registration for the entire country was 92.5 per cent complete. This means, however, that even after 25 years of birth registration, in 1940 almost 200,000 babies in the United States were not registered! This is indeed a severe indictment of the entire registration system. It is particularly serious at present when millions of adults are searching frantically for every shred of evidence to prove beyond question their age, parentage, and citizenship. Special provisions are being

made to place on file delayed birth records for these people, born before the present widespread and systematic registration of births was established.

The children of 1940 who 20 years from today cannot produce satisfactory birth records will lose even more than their parents. Each step we take toward the goal of social and economic security for everyone makes more precious each individual's proof of his rights to such benefits. It is the responsibility of the state registrars, the state health departments, and the Bureau of the Census as well, to see that 100 per cent of our children are registered at birth. We must assure today's children their birthrights tomorrow!

Organizing a Large Community for Health Education*

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ORGANIZING a community for health education is part of the democratic process. The people of America rule themselves. They are individuals desirous and capable of standing on their own feet. The health department should help the community to understand its health problems and aid in their solution.

Health education provides a way in which every individual in the community may be enlisted to carry on a part of the health program. By providing an opportunity for them to express opinions, to find and solve problems, by allowing people to help themselves, the health education program is observing our most cherished fundamentals of democracy.

This concept of health education does not agree that a publicity campaign is an adequate program. Publicity, planned and executed by professional workers, is limited in its effect because it is passively received. It is learning and not teaching which is important in education. Without participation, there can be and will be little if any learning. Fanfare may be ignored or quickly forgotten, but hours spent in discussing the problem, in planning, in executing plans cannot help but leave some impression upon the mind of the individual.

There are, of course, many problems associated with organizing the people of any city, large or small, in a health education program based on these principles. I shall discuss what we are doing in Boston as an example of health education.

The first problem which confronted us was the question of unit areas. Should the program be built for the entire city as a unit or should it be organized in separate districts? For many reasons we favored a district or sectional organization bound together by unified administrative policy. No city of a million people has a single set of characteristics. It is, rather, a group of small communities, separate in racial origins, tastes, economic status, and even languages. The greatest number of social groups which will participate actively in the programs are limited in their membership to small sections. Even nation-wide fraternal and labor organizations have their membership separated into posts or locals. Problems, too, differ widely. Tuberculosis may be widespread in one section and all but absent in another. Time and effort would be wasted in urging the people of a section to solve a problem that was nonexistent in that section.

As community organization was to be the responsibility of health educators, it was thought best to limit the activities of each worker to a sufficiently restricted area to enable her to become thoroughly acquainted. The worker should be a person known in the dis-

* Presented at the Joint Session of the American School Health Association and the Public Health Education and Public Health Nursing Sections of the American Public Health Association at the Seventy-first Annual Meeting in St. Louis, Mo., October 28, 1942.

trict, both to the residents and to the other professional workers in the schools, libraries, and social agencies. She should have the opportunity for careful study of the characteristics and the idiosyncracies of her section and for becoming familiar with the facilities afforded by the district which may be valuable in the conduct of her program.

One section of the city was first selected for organization according to this plan in order to work out the basic policy which must guide the entire health education program. In this district a preliminary study was made. Vital statistics were analyzed in order to ascertain what the more pressing health problems were. Lists of professional workers, social clubs, schools, settlement houses, physicians, and dentists were compiled. The peculiarities of the district were analyzed. After the educator had thoroughly familiarized herself with these data, it was possible to begin actual organization of the district.

In Boston, the Health Department is decentralized, each of eight sections having a Health Unit. The educator was given an office in the Unit in her district so that it would be easy for the people working with her to come together for meetings and consultations. The Unit is well equipped for such meetings, having a large auditorium and several smaller rooms for conference work.

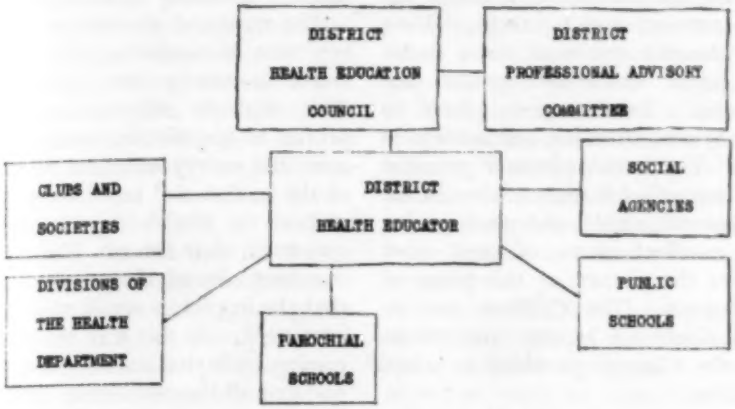
Since much health education and service begins with the private physician and dentist, the educator invited them to a meeting where the aims and policies governing the program were explained. The 30 physicians and 12 dentists were invited by personal visit. A separate meeting was held for each group. At these meetings, they were asked to select a committee of three to represent them in conference with the other groups. In much the same way, other professional workers were approached and the aims of the program were explained. These groups included the churches of all denominations, both the public and the parochial schools, the settlement houses, the Community Health Organization, visiting nurse agency, and the library.

Up to this point the program had concerned itself only with professional workers. The educator had, however, in her conversations with these workers, learned the names of many individuals living in the district who might be termed "key people." One of these accepted the chairmanship of the district committee or council. Through several conferences between the chairman, the district health educator, and the administrative consultant for the program, Professor Clair E. Turner, other residents of the community were selected to be members of the committee. In order that these lay people who were taking part in the program would not feel overwhelmed by the weight of the professional group, it was thought best to have two committees, one professional and one lay. The two were bound together by the health educator who served as secretary of each and by the chairman of the lay committee who also served as chairman of the professional committee.

The lay committee met each week. The first meeting permitted them to get acquainted with each other and with the aims of the program. They liked the idea of having an opportunity to improve their district. The section has a relatively low economic status and many of the people are employed in the large market area adjacent to it. Parts of the section enclose week-end street markets.

The committee members were frank in their evaluation of their section, and were not reluctant to acknowledge the presence of many health needs. Since it was agreed that only one major problem should be considered at a time,

ORGANIZATION OF A DISTRICT FOR HEALTH EDUCATION

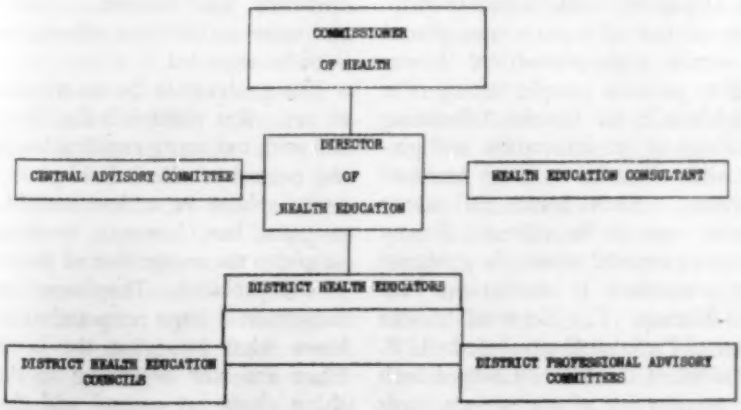


they were anxious to select the most pressing need.

The survey method was adopted. Using materials provided by the educator, each member analyzed a given area. These reports were discussed at an open meeting and the problem was selected. The health educator is able to guide the committee to some extent in its selection since she has the information which enables her to explain needs and problems to her group.

The first problem this group elected to solve was that of rat control. Time does not permit a long description of the activities carried out by the committee concerning this problem. In the course of the months during which this

ORGANIZATION OF THE CITY FOR HEALTH EDUCATION



question was their main concern, they held an open house at the Health Unit, explaining rat control by means of exhibits, movies, and speakers. They helped the educator work out a leaflet and a poster which were printed and distributed. Exhibits were placed in store windows, libraries, and settlement houses. The health educator provided a teaching unit for each teacher in the sixth, seventh, eighth, and ninth grades. Many excellent pieces of pupil work attest to the efficacy of this phase of the program. The children also attended illustrated lectures and movies which the educator provided at school assemblies.

Other divisions of the Health Department coöperated with the program. The nurses distributed fliers announcing public meetings to the people with whom they came into contact. The sanitary inspectors gave advice on rat control. The food inspectors urged all food handlers to take proper steps to rat proof storerooms containing supplies.

After the program was under way, the need was felt to reach every person in the district. The committee members were willing to visit every home but considered themselves inadequate to render expert advice on this subject, even though they had familiarized themselves with all the available literature. The sanitary division of the Health Department was asked to help, and two rat control experts were placed at the service of the committee. It was decided to make a sample survey of a typical block in the district, tabulating the findings of rat infestation and giving rat control advice to every landlord and tenant. Each house and every apartment was to be visited. Survey forms were prepared under the guidance of the consultant in sanitation, Professor Murray P. Horwood. The Division of Predator Control of the U. S. Department of the Interior helped both in the preparation of the survey cards and in the sample survey. A definite procedure was agreed upon for the uniform recording of findings.

The results of the sample block survey were so convincing that it was decided to survey the entire district. This work is still continuing. The people of the district were anxious to have the survey extended to all parts of the section and urged the committee to have the Health Department inspectors reach their homes. The committee members advised the people of a block that the inspectors would visit them the next week. In this way the inspectors, coming by invitation, are then expected and find all the people very coöperative. The resident accompanies the inspector on his survey so that he may learn what evidences there are of rat infestation and ways of overcoming the rodent. Literature is left with each person. In this way, the survey has become a people's project and involves true education rather than merely survey statistics.

This description of some of the activities of the committee, illustrates the way in which all the facilities of the district are concentrated on a single problem. Unlike short campaigns, this type of program has the advantage of continuity. Children and adults alike are frequently reminded of their part in solving a community problem. There has not been one instance in which cooperation was refused. Some people are more active than others, but that is to be expected.

The problem is by no means solved as yet. Rat control is too big a problem with too many ramifications beyond the control of the individual to be entirely solved in a few months. The program has, however, awakened the people to the recognition of the existence of the problem. They now know the dangers of a large rat population. They know what rats cost the community. They are now beginning to do something about rat control and they have

the information they need to work intelligently.

There is another important feature of our district education organization. It became apparent that unless a large number of the residents felt themselves a part of the program, the committee would resolve itself into just another group in a district thickly studded with social organizations of various kinds. To avoid this possibility, it was decided to form the North End Health League, with individual members who were residents of the district, and group members consisting of clubs, societies, and labor organizations. The lay committee was to be the executive group, calling itself the North End Health Council. Each club joining the League was to have the privilege of sending a representative to the council. The members of the original committee undertook this task of securing group members. The list of social groups was carefully checked and clubs purely political in set-up were eliminated. About twenty-five organizations were invited to join, most of which did so immediately. In this way, such groups as the American Legion posts, the Veterans of Foreign Wars, and many others became members of the council. Their club meetings now became ready-made audiences for the program. There is no need to try to gather an audience, since the total membership of these clubs includes practically every adult in the entire district.

I have described the organization of a single district in fairly complete detail, since it illustrates the principles employed by the health education program. We have a city-wide advisory committee of experts from other organizations, which discusses all plans with the consultant and the health educators. In this way, we have the benefit of their advice and avoid conflict with other programs. Very often valuable assistance is obtained. One of the representatives of the advisory committee, for example, is the head of our Community Health Association which provides the visiting nurses in our city. These nurses are very coöperative and help wherever possible. Their support of the program, permits a multiplicity of approaches that makes for good education. This type of coöperation also permits an impartial evaluation of the work accomplished and does away with many pitfalls that otherwise might not be avoided.

As a health officer, I am particularly enthusiastic about the benefits of a health education program. Since the educators work in close contact with the residents of the community, they can help in interpreting the work of the other divisions of the Health Department. They form a contact between the people and the technical workers of the department. By interpreting the purposes and services of the Health Department, they make the residents of the city far more receptive to its work.

Since February 1, 1943, the services of five health educators as well as the continued consultant service of Dr. Turner have been available to extend this program on a city-wide scale. The Health Department has always had the complete responsibility for health work throughout the parochial school system. A new curriculum in health education has been completed by the Director of our Health Education Service, working with committees from the Health Department and the office of the Diocesan Director, for use in these schools. The district health educators are also acceptable to the public school system, since they hold the degree of Master in Education as well as the Certificate in Public Health in the field of health education. This makes possible the simultaneous development of school health education and adult education as illustrated by the

rat control program in the North End.

There are, of course, certain city-wide activities of public health education such as printed matter, newspaper articles, radio exhibits, and in-service training of personnel. These are an important part of health education, but I believe a health education program which consists only of these activities is far from adequate. The essence of good health education in a large community, as I see it, is the organization of key people and social groups in the various sections of the city to find and to help solve their health problems. With such a program, the health department can really become the appreciated servant of the people instead of a policing agency. This recognition and appreciation of the value of a strong and well equipped health department is reflected by active support for new programs and adequate working funds. A health education division, staffed by well trained workers, is an essential part of any public health department.

Development and Management of a Cotton Rat Colony*

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FOLLOWING the announcement made by Armstrong[1] that poliomyelitis virus could be transmitted to cotton rats, the Michigan Department of Health Bureau of Laboratories obtained wild stocks[2] of *Sigmondon hispidus hispidus* (Figure 1) from Florida and South Carolina, and of *Sigmondon hispidus littoralis* from Florida and Georgia, and has attempted to raise them in captivity.†

Approximately 500 trapped wild rats were the foundation of the colony which was started November, 1939. Subsequent to September, 1940, 7,800 young have been produced from this colony which has averaged about 180 pairs of breeders. At the present time the colony is composed of 250 pairs of breeders which produce about 700 young per month.

EQUIPMENT

A cotton rat colony can be housed in any quarters suitable for the raising of small animals. However, it has been found necessary to design and build a special cage 20″ x 10″ x 10″ for breeding purposes (Figure 2). The cage, constructed of sheet iron and screen, and coated with aluminum paint, has an enclosed nesting compartment with a removable "Masonite" bottom. The exercising and feeding compartment has screen sides and removable screen bottom. A tray containing wood shavings slides under both compartments. The breeding cages are grouped in units of 25 on movable iron racks.

Young animals following weaning, and animals ready for test, are kept in small animal cages (Figure 3) which are mounted on rubber tired trucks in batteries of four.

WORK SCHEDULE

In maintaining the cotton rat colony the following duties are carried out routinely:

1. Daily: Water and inspect all members of the colony, recording births and deaths.
2. Three times a week: Feed all members of the colony.
3. Weekly: Wean all 3 week old rats, discard nonbreeders, pair new stock, and clean all cages.
4. Monthly. Wash and sterilize all cages and drinking bottles.

FEED

From the great variety of foods which have been offered to the cotton rats, the following diet has been adopted because the rats have eaten it readily, have apparently thrived, and have reproduced satisfactorily.

1. A mixture of 1 part sunflower seed and 3 parts of rolled or whole oats.
2. Equal parts of commercially prepared fox and mouse pellets.

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* Presented before the Laboratory Section of the American Public Health Association at the Seventy-first Annual Meeting in St. Louis, Mo., October 30, 1942.

† Aided by grant from the National Foundation for Infantile Paralysis, Incorporated, and the Works Project Administration.

3. Fresh apples, carrots, tomatoes or alfalfa cuttings.
4. Water (from glass bottles equipped with hanging drop dispenser).

MANAGEMENT OF BREEDERS

Six week old cotton rats of healthy and sturdy stock are selected for breeders, and are permanently marked by a system of ear and toe markings. At the time of pairing, a breeding record is compiled for each male and female. This record includes information regarding sex, generation from wild stock, identification number, date of birth, and production record.

Under the present system of management, matings of a male and a female are permanent except in certain instances when it is found possible to rotate one male among several females.

Male and female rats from 6 to 7 weeks of age are sexually mature and are ready to be paired. In studying vaginal smears from a limited number of females, it has been found that the estrous cycle is irregular, varying from 4 to 8 days, with an average of 5.7 days. The period of gestation varies from 26 to 28 days. The average number per litter is 5, with 11 the maximum that has been encountered. Newly born animals have averaged 7 grams in weight and are well haired out at birth. They have begun to run around the cage at an early age, have eaten solid food within about 1 week, and have been ready to be weaned at 3 weeks of age.

The average production span of a female cotton rat is not known. The

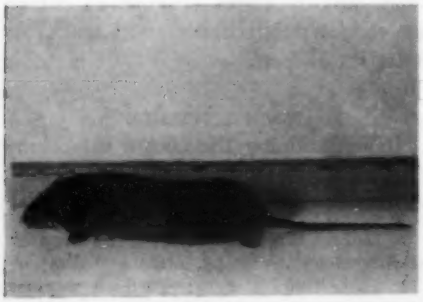

FIGURE 1—Female cotton rat, 1 year old

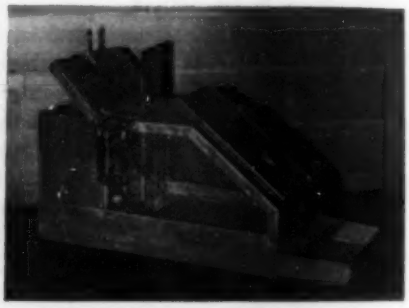

FIGURE 2—Cage used for breeding

FIGURE 3—Cage used for weaned stock and animals ready for test

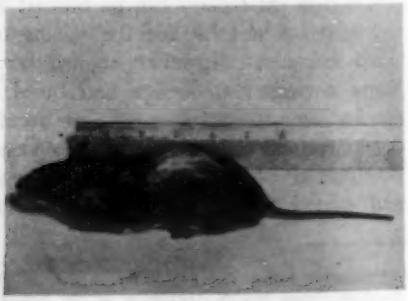

FIGURE 4—Male cotton rat, 6 months old, affected with alopecia

Pictures taken by George W. Jennings, staff photographer, Michigan Department of Health

oldest rat in the colony that is still producing is 20 months old. This is a 2nd generation female which has a record of 70 births in 13 litters.

Precautions must be taken in the handling of cotton rats and it is advisable not to disturb the newly born rats. The 8th generation rats, born in the colony, are as nervous and likely to bite as are rats when first trapped. Heavy cowhide gloves must be worn when handling rats 2 weeks or more of age. The animal should be grasped firmly at the nape of the neck, as handling the rat by its tail usually results in stripping off the skin.

Through a system of close inbreeding, it may be possible to produce a specific type of cotton rat which would be more uniformly susceptible to viruses. From a group of 10 brother and sister matings, three pairs were selected to be used as the basis of three pure strains of animals. One strain which showed evidence of lighter hair coloration has produced 4th generation rats of sturdy stock.

LOSSES AMONG COTTON RATS

Losses among cotton rats have been mainly due to three factors: mechanical injuries which have resulted from fighting among mature animals or from improper handling by attendants; sacrifice of rats in an effort to eliminate and control alopecia; and a small percentage loss from possible bacterial infection, internal parasitism, or starvation.

1. Among total deaths in breeding stock 45 per cent have been due to fighting. The loss has been roughly 60 per cent among males and 40 per cent among females subsequent to their pairing or parturition. This loss of breeding stock has been materially reduced by washing each member of the pair with a 1 per cent pine oil or coal tar disinfectant solution in order to destroy their natural odor. A small unknown percentage of animals die as a result of injury during handling or have had to be killed because of severe injury inflicted by cage mates.

2. A number of rats have been sacrificed in an effort to eliminate and control alopecia, or loss of hair, which has occurred in rats of both species and of all ages. Subsequent to its discovery over 400 rats have been affected to varying degrees by this condition. Alopecia is usually first noticed in the dorsal-lumbar region where the loss of brown-tipped guard hairs results in exposure of the dark underfur. In advanced stages the back becomes almost denuded of hair (Figure 4) and the area eventually extends forward to the head region. The condition has also been exhibited in other specific regions such as around the eyes, on the forehead, and at the base of the tail.

The cause of alopecia is uncertain. Ringworm spores have been found in the shafts of hair taken from affected areas, but they may not be the primary cause of the condition. No animal has ever lost weight or died as a result of the condition.

3. Losses due to bacterial infections, internal parasitism, or starvation have been small. Bacteriological examinations made on rats that died of unknown causes have revealed the presence of a variety of bacteria including green producing streptococci, staphylococci, and organisms of the *Proteus* group. Cotton rats evidently are not very susceptible to organisms of the *Salmonella* group since the colony, for the past year, has been housed with a colony of mice where *Salmonella* infections have been present. Furthermore, cotton rats experimentally have resisted artificial oral exposure to *Salmonella* organisms.

Internal parasites have been recovered from trapped wild animals which died during or soon after shipment. Of 170 wild animals thus examined 49 were found to be infested with either tapeworms, roundworms, echinococci, or

microfilaria. Fleas and lice also were found on the wild stock. No parasites of any type have been found in any of the animals that have been raised in the colony.

Cotton rats apparently are not very hardy and easily die as a result of moderate starvation. In cages where large numbers of rats are kept the food supply occasionally becomes low over week-ends, the rats become weak, refuse to eat, and some of them die.

A loss of 9 per cent has been observed among young animals prior to weaning. The exact cause of this fatality is unknown. Deaths following premature births have been recorded and some adults have killed their young soon after birth.

SUMMARY

The development and maintenance of a cotton rat colony for use in poliomyelitis research by the Michigan Department of Health, Bureau of Laboratories, has been presented. By careful management, cotton rats can be successfully raised in captivity.

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The Opportunity for the Engineer in the Field of Housing*

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SIXTY years ago little was known as to the factors required to produce a safe and potable water supply. Today, through laboratory research and controlled field experience, the sanitary engineer has the tools to diagnose and prescribe for almost any specific water supply problem.

The objective, however, will not have been realized until safe potable water reaches the consumer in the home and the waste is returned to some point for safe disposal. The real property inventory surveys [1] made in 1934–1936 indicate that 15 per cent of all families living in cities in the southwestern part of this country do not have running water in their homes, and 32 per cent of all families in southeastern United States are without private indoor flush toilets. Enforcement officials know well that outside community toilets, even when of the type connected to a sewer, are not satisfactory because of the high percentage of stoppages and other insanitary conditions, due to improper use, freezing, use of inadequate flushing devices, and lack of responsibility for maintenance, typical of most outside community toilets.

Other figures on housing from this same study [1] emphasize the magnitude of the slum phase of the housing problem which is of primary concern to public health officials. For example, 13.9 per cent of all dwelling units in the United States needed major repairs with 2.3 per cent unfit for use. These figures vary from 20 per cent needing major repairs and 3.4 per cent unfit for use in the southeastern section, to 12.8 per cent and 2.3 per cent respectively in the northeastern section.

Of the families living in urban communities, 8 per cent paid less than $9.99 a month for their living unit. The average percentage figure varied from 5.9 in the northeastern section to 36.6 in the southeastern section. In other words, more than one-third of the families of the southeastern section of the United States did not pay enough rent during this period to finance anything more than a shack without a toilet or sink and without other protection from the weather and insects.

According to Shelby M. Harrison [2] the 1942 President of the National Conference of Social Work, one-quarter of the population of the United States in 1933 needed public assistance and one-ninth even in 1940 needed it.

INADEQUACY OF PIECE-MEAL APPROACH

The problem of providing safe and healthful housing for all families may appear at first glance to be one primarily of forcing property owners to

* Presented before a Joint Session of the Conference of State Sanitary Engineers and the Conference of Municipal Public Health Engineers in St. Louis, Mo., October 26, 1942.

maintain or improve their property to meet a minimum standard. Tenants, however, have something to do with whether a house is substandard or not. The income from the property is influenced by the neighborhood environment and the state of repair in turn by the income of the tenant. The level of rents varies with the cycles of prosperity and depression and with the shifting of population and consequent change in percentage of vacancies. The difficulty is further complicated by an unbalanced allotment of areas in zoning plans, for business, industrial and residential use, and by heavy street traffic, lack of playground space, lack of nearby schools, churches, and shopping centers, heavy railroad traffic, heavy smoke, or inadequate transportation facilities.

It is not simply a matter, therefore, of the official accepting an assignment from the local newspaper, or a demand of public opinion, or even a request from the city administration to clean up the slums, but rather one of defining and measuring the problem on the basis of facts secured through objective investigation. The executive health officer and the engineer can then develop a housing philosophy and a plan of action commensurate with the importance of good housing as one of the foundation stones in a public health program, and coordinated with the plans of other local departments and agencies concerned with the housing problem.

The major effort at this time, however, in both man-hours and manpower, in some, if not most, of the divisions of sanitation in municipal health departments throughout the United States is directed toward the correction of insanitary conditions about the home. Even the directing health officers evaluate most of these programs as of minor public health significance and place them in the nuisance category. At the end of any year's work many of the grossly insanitary conditions complained of are still uncorrected and at the end of each 10 year period about the same proportion of slums remains.

The Committee on the Hygiene of Housing is urging that the housing problem be met as a coördinated community program, and not as the usual routine enforcement program within the complaint division of many departments without reference to any overall objective and plan.

Dr. Huntington Williams, Health Officer of Baltimore, expressed the same feeling when he commented on his own experience.

> It was apparent that the team in question was very much like a group of football players who were placed on a field without uniform, without preliminary coaching or training and under the gaze of an expectant grandstand, were called upon to produce with promptness a series of touchdowns; further, it became promptly apparent that no rules or signals had been established for their teamwork. From the early efforts it appeared as though one or another of the team at the signal secured the ball but ran in the wrong direction and made a touchdown for the opposite side.

A COMMUNITY PROGRAM

Some of the specific projects or programs in any community, which considered jointly make up a well balanced program, may be listed as: low cost subsidized housing projects, a planned long-range health department enforcement program, a sound real property tax delinquent policy, a sound rental policy of the welfare agencies, up-to-date legislation for the control of new housing, an enlightened nursing program, technological programs to reduce the cost of present assembly practices in building houses, an up-to-date balanced zoning plan, private housing construction and maintenance, and a definite plan for the rehabilitation of blighted areas. A coördinated program of this kind requires, of course, a leader

in each community, who must take the initiative in developing such a program and in obtaining the necessary team work for its accomplishment.

Some useful tools [3] for measuring and defining the housing situation in any community have been developed by the American Public Health Association's Committee on the Hygiene of Housing.

Minimum standards [4] for healthful housing have also been developed as a guide for the design and construction of all new housing. Practical standards which enforcement agencies can require as a condition to permitting occupancy in existing housing units, may have to be less than the ideal, and may vary for different communities according to the wage scales and the housing standards already prevailing in the community.

Once these practical standards are established, the annual cost required for remodeling and maintaining existing housing to meet the standard may be estimated. Incomes and rental paying ability of the population, when known, determine the percentage of families not able to pay these rentals. The sections of the city in which these people live will coincide roughly under usual conditions with the slum boundaries or the areas where houses needing major repairs predominate.

Besides the opportunities for leadership in the administrative aspects of the housing program, because of his position as engineer in the local health department, the planning field offers additional ground for action. City and regional planners have given little time and thought until recently to housing as one of the most important factors in the development of a sound plan for any community.

In large cities often as high as one-third of the areas subdivided for residential buildings have never been used, while large high taxed areas in the center of cities are being abandoned by higher income people to slums and blight. Those who can afford it move to suburban areas which are often unplanned and without satisfactory arrangements for water or sewerage. The problem of supplying public utilities to these new areas and the impending waste of scrapping much of the large piping systems already installed in the old areas needs study and planning for more efficient land use.

The present necessities in supplying war housing must be blended with future objectives. Planning for post-war construction projects to tide us over while both the armed forces and defense industries are being demobolized should be particularly attractive to sanitary engineers, since housing is expected to play an important rôle in that period.

BUILDING AND FINANCING HOUSES

The cost of land, materials, and labor reach a minimum figure of about $4,500 for a 4 room house with a 60 year life, even when built on a mass scale by the government. Under the normal system of building houses to sell, 80 per cent of all [5] the new housing built during the boom years of the 1920's was built for sale or rental to the top 18 per cent of the people in the maximum income group.

Data prepared by the Division of Economic Research [6] of the Bureau of Foreign and Domestic Commerce indicate the influence that the method of financing has on the percentage of people who can afford new housing or the lowest level of income that would support a new home. If a payment of $20 a month at 8 per cent interest, amortized over a period of 20 years, will finance a $2,500 house, the same payment of $20 a month, at 3½ per cent interest and amortized over a period of 40 years, would finance a house that cost over twice that figure, or $5,200.

The federal government's interest in encouraging private housing construction through the Federal Housing Agency has resulted in longer-term amortization periods, lower interest rates, and inspection to insure sound construction. This has resulted since 1935 in an increase in the production of new houses for families in income classifications previously considered as unsuitable markets for new houses. In 1936, for example, the median FHA valuation of new single family homes on which mortgages were accepted for FHA insurance was $5,625, including land, while in 1940 this figure had declined to $5,059. Since 1940 there has been a persistent downward trend in both valuation in homes built, and in the percentages of families having incomes less than $2,500 and of $2,000 who had invested in new homes.

Building laws, in some cases too stringent and outmoded, have added to the cost of building, and have limited the income group for which housing was built.

The building industry [7] has been developed from a number of handicraft trades erecting the luxury type of house. It must be completely reconstructed to provide more efficient and less expensive methods of fabrication before any great saving in house construction can be realized. Cheaper and better materials are also needed. That the construction industry [8] is awake to this challenge is evidenced by their efforts to encourage courses and training for engineers for recruiting by the industry. Courses are now offered in light construction engineering at 11 recognized engineering schools.

In normal years, 50 per cent of the total construction volume in dollar value is in housing construction. The U. S. Department of Commerce [9] has recently estimated that the dammed-up demand for housing will reach 40 billions of dollars by 1945.

HOUSING, A PROBLEM FOR LOCAL ATTENTION

Although the problem of housing may be viewed on a national level, it is fundamentally a problem arising from local conditions. The local building, planning, enforcement, zoning, and taxing programs, as they affect housing, must be rationalized on the basis of the actualities in each specific community. Leadership is required to stimulate coordinated action by all those agencies whose individual programs provide the answers to some of the housing questions.

Continuing authoritative information, if available, would be of inestimable value to planners, enforcement officials, mortgage agencies, real estate interests, and even the renters and purchasers of housing who would benefit by a more stable and predictable housing market.

The future holds promise of an expanding program of public health activity in the fields of nutrition, housing, and medical care for all the people. Of these, no one field holds more challenge for the public engineer than that of housing.

No profession or group today, whether architect, builder, lawyer, doctor, or social worker, has the background of education, training, and experience to fit them better to lead in the sound development of a housing philosophy and program than the engineer in the local health departments. Why do they not meet this challenge as they have met other difficult issues in environmental control of the past three decades?

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"Doctor Jones" Says—

A letter I saw the other day: there was an article in *Health News* a while back about public health nurses and the war—said what a serious matter it was when one nurse left that was covering a whole rural county and how, in the big places where several nurses were employed by different agencies, their services ought to be coördinated so they could release some to handle these rural situations. It seems this woman read that and she wrote to the Health Department: said a lot of good nurses had gone to work in war industries; she thought there was something wrong, somewhere, when a nurse could get paid more on a job she knew practically nothing about than in the vital work she was 'specially trained for. She's got something there, that woman has.

The folks that're running the war—the Government—they recognize that protecting health on the home front—it's a necessary part of the war effort. In fact it's more important than ever. With people shifting around from this place to that and men coming back from tropical countries with new diseases and so on, there's more danger of epidemics and disease being spread around—to say nothing of morale. And this job of protecting health, it can't be done by just anybody that happens to be handy. It takes people with special training and experience: doctors, nurses, sanitary engineers and milk sanitarians. It certainly don't look like good management to waste that kind of training and experience on a job somebody else could handle just as well—maybe better.

Of course the doctors—they've got this Procurement and Assignment Service—the Army and so on won't take 'em if this Board says they're essential where they are. Anyway, if I was a soldier and was sick or wounded I'd want a doctor that'd been practicing medicine—not doing public health work. And the engineers—I understand they're organizing the same sort of system for sifting 'em out.

The milk sanitation—in the Army it's all veterinarians. I suppose that's a hang-over from the old raw-milk days when the most they thought of was the cow. A veterinarian at least knew which part the milk came from. But today it's special training and experience that makes milk sanitarians, not what college they graduated from. Just being an M.D. or a D.V.M. don't make a milk sanitarian and some of the best of 'em ain't either one.

Yes, sir. Whether it's war or peace, or men or women, it's a pretty good idea to use folks in the jobs they're qualified for.

PAUL B. BROOKS, M.D.

Health News, New York State Department of Health, Apr. 26, 1943.

Food Handlers in the Army and Their Relationship to Salmonella Food Poisoning*

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THE rôle of the food handler in enteric disease transmission has been extensively studied, but due to the complexity of the factors involved, coupled with inadequate knowledge and means for the detection of dangerous disease carriers, there is a tendency generally to consider them to be of less importance than other factors involved.

In general, this may be true if we consider only the family unit which in normal times constitutes the greater part of the living environment of the world's population. However, the congregation of large elements of the population in armies or cities where other than family contacts predominate in the environmental picture, such as in eating places, places of entertainment, in transportation, places of employment, and schools, presents greater opportunities for disease carriers, and particularly those engaged in food handler rôles, to transmit their infections to non-immunes. These circumstances are always more prevalent during war, disasters, or economic upheavals resulting in mass movements of populations. The present war is no exception—in fact, it is causing a more serious disruption of populations than any experienced in the past. This is due to the ease with which great numbers of individuals can be transported to distant places with transportation means now available, and to the deep penetration of bombing aircraft into areas other than those of actual combat. This results in a greater destruction of the habitations of man and the basic industries that provide for his livelihood. Aside from the destruction of sanitary facilities and equipment, these factors all tend to break up family units and provide dispersion of disease carriers into non-immune populations, thus setting the stage for major disease outbreaks. It is therefore obvious that our civil population and our armed forces will be increasingly exposed to these detrimental influences.

The Army must by necessity gather its personnel from all sections and classes of our populations and must for training and combat purposes bring them together in large numbers. These individuals may be required to serve in any part of the world and will be exposed to whatever diseases are present in the areas concerned. Under these conditions, the food handler carriers of communicable disease will undoubtedly play an important rôle in the prevalence of disease among our troops.

There is plenty of evidence that the Salmonella group of organisms may be

* Presented before the Laboratory Section of the American Public Health Association at the Seventy-first Annual Meeting in St. Louis, Mo., October 27, 1942.

of importance in enteric disease outbreaks that may be encountered. Experience in the Panama Canal Department during 1940 and some of the bacteriological findings in outbreaks encountered to date lend support to this statement. Small outbreaks of food poisoning, diarrhea, and dysentery had been occasionally occurring in various commands in the Panama Canal Department prior to 1940. This led in May of that year to a careful laboratory investigation of the factors involved by the Bacteriology Department of the Board of Health Laboratory, Ancon, Canal Zone, aided by a field investigation conducted by Lt. Col. W. C. Cox, M.C., Assistant Department Surgeon, Panama Canal Department. Twelve food poisoning outbreaks occurred between May and December 31, 1940, and various species of Salmonella were isolated as the etiological agents from the cases occurring in eleven of the outbreaks. There was a direct correlation between the species of Salmonella and Shigella isolated from food handler carriers and the cases of food poisoning occurring in each outbreak. Detection of the carriers and their removal from food handler duty stopped the occurrence of these infections in the commands concerned. It must be pointed out that the food poisoning outbreaks were usually preceded by a few scattered cases, followed by an explosive outbreak — then a continued small incidence of the disease until the food handler carriers were detected and removed from duty, after which no new cases developed.

As a part of the food handler examinations, three stool specimens were collected on alternate days from each individual and cultured for intestinal pathogens. These specimens were delivered to the Board of Health Laboratory within 24 hours of their collection and, for the detection of the Salmonella typhoid groups present, were planted in Selenite F broth, followed by incubation of the broth at 37° C. for 18 to 24 hours. Heavy inoculations of the seeded broth were then made to large Endo plates (150 x 12 mm.) and bent glass rods used for streaking. It was our experience that proper separation of sufficient colonies could not be obtained by using the small Petri dishes. Further, if inhibitive media were used for plating instead of the Endo medium, that colonies picked would frequently not be in pure culture and would require further plating on Endo or E.M.B. medium before carrying out definitive studies.

After plated cultures were incubated overnight, suspicious colonies were picked and inoculated into Kliger's iron medium. Cultures on this medium giving characteristic reactions of the Salmonella or Shigella groups were tested for agglutination in 1–100 dilutions of O and H group specific sera. Those giving specific agglutination were further studied and classified by the use of sugars and morphological examination. Positive cultures roughly classified in the Salmonella group were then forwarded to Dr. P. R. Edwards of the Department of Animal Pathology, University of Kentucky, Lexington, Ky., for definitive species identification, as certain specific H agglutinating sera were not available locally.

Sixty-six hundred and seventeen stool specimens were examined from approximately 2,000 individuals. Of this group, 49 were found to be carriers of intestinal pathogenic bacteria, or an average incidence of 2.45 per cent. Of this group, 40 were carriers of Salmonella other than *Salmonella typhi*, 4 of *Salmonella typhi*, and 5 of Shigella.

The Shigella carriers were made up of 3 positive for the Sonne bacillus, and 2 for the Flexner group of dysentery bacilli. Fourteen species of Salmonella were isolated. The type and number of carriers of each species are given in

Table 1. The findings on all carriers were confirmed by additional cultures after the first isolation. Some of the Salmonella carriers yielded positive cultures over a 60 day period.

TABLE 1

Panama Canal Zone, 1940

Species	*Number of Carriers*
S. paratyphi B	2
S. paratyphi B Var. Java	12
S. typhimurium	5
S. derby	2
S. paratyphi C	2
S. oranienburg	3
S. montevideo	1
S. newport	6
S. typhi	4
S. panama	3
S. give	1
S. anatum	1
S. arechavaleta	1
S. saint paul	1
	44

The distribution of food handler carriers by place and type of personnel is given in Table 2.

TABLE 2

Carriers, Salmonella, Found on Stool Examination during 1940, by Place of Duty and Status

Place of Duty	*Military Personnel*	*Civilians*	*Total*
Albrook Field	2	1	3
Fort Amador	3	1	4
Fort Clayton	3	20	23
Post of Corozal	2	0	2
Panama	0	1	1
Camp Paraiso	3	1	4
Quarry Heights	2	1	3
Fort Randolph	0	2	2
Rio Hato	0	1	1
Fort Sherman	1	0	1
Totals	16	28	44

The distribution of the carriers by posts shows a total of 23 for Fort Clayton. A possible explanation of this occurrence was the size of this command and the fact that three fair-sized outbreaks of food poisoning occurred at this post during the period of investigation. The principal organism isolated from cases and carriers at Fort Clayton was *Salmonella paratyphi* B Var. Java.

The medical history of most of the food handler carriers was essentially negative for gastrointestinal symptoms or a history of food poisoning or diarrhea within 6 months of their detection as carriers. Six of the group gave a history of diarrhea within 3 months' time, but none of them within a period of 1 month prior to the examination. One gave a history of diarrhea 2 years previously and one gave a history of right upper quadrant pain for about 1 month previous to the time of examination.

All positive food handlers were hospitalized and were not allowed to assume their vocation until repeated stool cultures over a 30 day period showed the absence of intestinal pathogens.

SUMMARY

The potential rôle of food handler carriers of Salmonella and Shigella as a possible source of epidemic disease outbreaks during the present war is discussed and the Army experience in the Panama Canal Zone during 1940 with food handler carriers of Salmonella and Shigella presented. Two thousand food handlers were examined—44 were positive for Salmonella, and 5 positive for Shigella; 14 species of Salmonella and 2 species of Shigella were isolated. Positive food handlers were generally asymptomatic and were associated with small epidemic outbreaks of food poisoning and diarrhea.

Use of Ratings in the Evaluation of Exhibits

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THE evaluation of exhibits in health education becomes increasingly essential as public health workers make more frequent use of that medium. At almost all state or county fairs, conventions, or other large gatherings there will be found one or more health exhibits, many of which are complicated and expensive. Despite increased interest in using exhibits, there is little objective evidence concerning their effectiveness. Generally the sole evaluation of an exhibit before it is put on display is the judgment of the exhibitor and his associates. Are such ratings dependable, and can large expenditures for exhibits be justified on subjective opinions?

That the validity of ratings may be open to some doubt is suggested by previous studies of ratings on the quality of drawings, English compositions, and handwriting. As early as 1910 Thorndike asked 30 judges to rate 37 specimens of handwriting for quality.[1] In rating one of the specimens, one judge stated that the writing was of the highest quality; 5 stated it was of the poorest; and the ratings by the other 24 judges were distributed throughout the range between best and poorest. Later, Thorndike,[2] Cohen,[3] and others showed similar variations in ratings of drawings, and Hillegas[4] demonstrated that ratings are unreliable measures of quality in English composition.

Although as a result of such studies those in educational measurement no longer use ratings as a means of evaluating educational materials or products, constructors of health exhibits have seldom utilized any other measure of effectiveness. For that reason it has seemed advisable to investigate exhibit ratings to ascertain whether such evaluations are reliable; and the New York World's Fair presented an excellent opportunity for that investigation. Grouped in the Medicine and Public Health Building were many exhibits prepared by many health workers, with extremely diverse ideas as to effective exhibit technic, including all sorts of combinations of movement, color, and arrangement. Twenty-six major ones were selected for study.

In evaluating, two questions were posed: Could professional workers agree on the most effective exhibits in the group? Could they also agree in selecting the least effective displays?

RATINGS BY PROFESSIONAL WORKERS

Two hundred and seventy-one professionally trained persons, including public health workers, educators, students in professional school, and professional exhibitors were asked to

TABLE 1

Relative Frequency with Which 26 Health Exhibits Were Rated as "Best" or "Worst" by Professional Workers

Name of Exhibit	*Percentage of Professional Workers Rating the Exhibit as One of the Three—*	
	"Best"	*"Worst"*
Maternal Health	51.7	4.1
Maze of Superstition	26.9	10.3
Education of the Blind	25.8	1.1
Industrial Sanitation	24.7	0.7
Cancer	20.7	4.4
Dental Science	18.1	3.7
Pneumonia	17.7	8.5
Milk Control	15.5	3.7
Carrel-Lindbergh Apparatus	14.4	8.5
Heart and Circulation of Blood	12.6	8.1
Allergy	12.6	5.9
Glands of Internal Secretion	10.7	4.4
Immunity, Infections, Viruses	8.9	4.1
Syphilis—"Shadow on the Land"	6.6	5.9
Housing for Health	6.3	22.9
Tuberculosis	5.2	12.9
Chest X-ray Demonstration	4.8	17.7
Mental Hygiene	4.4	8.5
Social Hygiene in Your Town	3.7	3.3
Your Health Department	3.3	28.0
Medical Education	2.6	13.3
Safeguarding Medicinal Products	2.6	11.1
The Anemias, Story of Diabetes	2.2	13.3
Anesthesia	2.2	8.1
Veterinary Medicine	1.9	11.8
Child Health	0.7	16.2

review the exhibits and select the first, second, and third best as well as the three which they considered as the worst of the 26. Judgments were to be made in accordance with the following instructions:

> Please rate the exhibits in the Hall of Medicine on the basis of *at least* the following characteristics: (1) clarity of presentation, (2) general attractiveness, (3) integration of panels, and (4) value of information portrayed.

In addition, the rating form provided space for the judge to state his reason(s) for rating any given exhibit as "best" or "worst."

A tabulation of the frequency with which each exhibit was rated as one of the three best or one of the three worst is shown in Table 1.

Low percentages appearing in both columns for a given exhibit indicate marked lack of agreement among the judges on its relative merit. On only one exhibit (*Maternal Health*) did as many as half the judges agree that it was among the three best exhibits shown, and even on that one 11 of the 271 raters (or 4.1 per cent) considered it as one of the three worst.

No other exhibit was placed in the best or worst position by a majority of the raters; only 6 others were rated in a similar fashion by as many as one-fifth of the raters. For example, 73 judges rated the *Maze of Superstition* exhibit as one of the three best, but 28 others called it one of the three worst. Clearly, these data indicate that the criteria which the raters used were not applied consistently by the 271 individuals.

Further evidence of the lack of agreement between the judges is afforded through the following quotations from the rating blanks on given exhibits.

It may be argued that much of the disagreement may have been due to the different types of professional groups asked to rate the exhibits. To test that hypothesis, the judges were divided into four more or less homogeneous group-

QUOTATIONS FROM RATING BLANKS

Anesthesia Exhibit

"This exhibit portrays the place of anesthesia in modern surgery in such a manner that fear of possible pain and fear of anesthetic accident is removed. The scene of operation is quite accurately portrayed, with no attempt to dramatize the situation. The life-size moving figures are convincing. One leaves the exhibit with a feeling of reassurance."

"Here is an opportunity for a fine piece of work and what is there here—nothing but a hospital operating room—offers nothing to onlooker in an educational way. One glance and people walked away."

Dental Exhibit

"Presented very clearly and attractively; panels very well integrated. Affords definite information as to cause of dental decay and malformation impressing necessity of prenatal care, area (enamel) attacked first, correct method of cleaning teeth, value of early and regular visits to dentist; how personal appearance is improved by insertion of dentures. An excellent visual method of emphasizing care of teeth, especially for children."

"1. Negative
2. Uninteresting
3. Rather gruesome
4. Poorly organized
5. No participation by observers
6. Exhibit lost a fine opportunity of presenting some fine lessons in practical dental health education."

Social Hygiene Exhibit

"The general idea of presentation I thought was very good as well as being attractive. It makes one conscious of what the community can do for one. The general placing of the institutions was instructional. Exhibits of this type would lead to better health (mental and physical) and a general improved community life. It showed good integration."

"The colors are dull and lack all visual appeal. The name social hygiene, I believe, should be explained to the lay public. It is a somewhat misleading term. Many illustrations are used as a method of conveying information. These are inadequate, due to poor workmanship and lack of sufficient explanation. The name 'social' leads to much confusion on the entire exhibit. The integration of panels is without any logical sequence."

ings: public health workers (112 in number), educators (84), students of medicine or education (66), and professional exhibitors (9); and their ratings tabulated separately. The percentage of agreement in each professional group is shown in Table 2. There is no evidence in that table to indicate that there is any closer agreement when the ratings are tabulated by homogeneous professional groups than when they are considered as though made by a mixed group of professional workers. In only one homogeneous group and for only one exhibit (the students, in rating *Maternal Health*) was there a majority opinion on a specific exhibit. The same general lack of agreement exists throughout the table.

WHAT THE PUBLIC THINKS OF EXHIBITS

In order to determine whether the reactions of the general public (who, after all, are the ones for whom the exhibits were prepared) were more reliable than the judgments of experts, 18,449 lay spectators also were asked to rate the exhibits. Their instructions

TABLE 2

Relative Frequency with Which 26 Health Exhibits Were Rated as "Best" or "Worst" by 4 Professional Groups

Exhibit	112 Public Health Workers		84 Educators		66 Students of Medicine or Education		9 Professional Exhibitors	
	Best[1]	Worst[2]	Best	Worst	Best	Worst	Best	Worst
Maternal Health	49.1	0.0	47.6	7.1	62.1	6.1	44.4	11.1
Maze of Superstition	38.4	0.9	19.0	1.2	7.6	0.0	33.3	0.0
Education of the Blind	33.0	1.8	16.7	0.0	27.3	1.5	11.1	0.0
Industrial Sanitation	27.7	2.7	10.7	4.8	21.2	7.6	22.2	0.0
Cancer	21.4	4.5	19.0	2.4	10.6	1.5	22.2	22.2
Dental Science	20.5	3.6	19.0	7.1	9.1	18.2	33.3	11.1
Pneumonia	14.3	13.4	41.7	2.4	28.8	15.2	33.3	11.1
Milk Control	14.3	3.6	16.7	3.6	16.7	4.5	11.1	0.0
Carrel-Lindbergh Apparatus	12.5	4.5	16.7	8.3	7.6	6.1	11.1	0.0
Heart and Circulation of Blood	9.8	8.9	16.7	7.1	16.7	10.6	33.3	0.0
Allergy	8.0	8.0	9.5	3.6	25.8	15.2	0.0	0.0
Glands of Internal Secretion	8.0	5.4	6.0	6.0	3.0	6.1	22.2	11.1
Immunity, Infections, Viruses	8.0	2.7	9.5	7.1	10.6	3.0	0.0	0.0
Syphilis—"Shadow on the Land"	7.1	16.1	4.8	4.8	1.5	16.7	11.1	22.2
Housing for Health	5.4	7.1	6.0	13.1	1.5	6.1	0.0	0.0
Tuberculosis	4.5	24.1	7.1	20.2	9.1	27.3	0.0	0.0
Chest X-Ray Demonstration	4.5	12.5	2.4	23.8	9.1	16.7	0.0	33.3
Mental Hygiene	4.5	11.6	2.4	16.7	0.0	1.5	0.0	22.2
Social Hygiene in Your Town	4.5	6.3	1.2	15.5	0.0	3.0	0.0	0.0
Your Health Department	4.5	2.7	8.3	6.0	25.8	6.1	0.0	0.0
Medical Education	4.5	2.7	6.0	6.0	0.0	1.5	0.0	0.0
Safeguarding Medicinal Products	2.7	33.9	4.8	19.0	1.5	28.8	11.1	33.3
The Anemias, Story of Diabetes	2.7	3.6	3.6	19.0	1.5	21.2	0.0	22.2
Anesthesia	0.9	17.9	1.2	16.7	0.0	15.2	0.0	0.0
Veterinary Medicine	0.9	9.8	2.4	10.7	1.5	16.7	11.1	11.1
Child Health	0.9	8.0	2.4	10.7	4.5	25.8	0.0	11.1

[1] Per cent of group rating exhibit as one of the three best.

[2] Per cent of group rating exhibit as one of the three worst.

TABLE 3

Relative Frequency with Which 26 Exhibits Were Rated as "Liked Most" or "Liked Least" by 18,449 Lay Spectators

Exhibit	Per cent Liked Most	Per cent Liked Least
Tuberculosis	28.1	8.6
Carrel-Lindbergh Apparatus	28.1	2.2
Industrial Sanitation	26.5	3.2
Education of the Blind	26.1	2.6
Safeguarding Medicinal Products	25.0	2.8
Cancer	24.0	3.5
Heart and Circulation of Blood	23.0	5.1
Social Hygiene in Your Town	21.9	5.0
Pneumonia	19.2	2.8
Housing for Health	18.6	5.8
Allergy	18.4	2.7
Anesthesia	15.0	3.8
Milk Control	13.8	5.5
Maternal Health	11.9	8.3
Glands of Internal Secretion	11.6	16.0
Chest X-Ray Demonstration	11.6	6.8
Your Health Department	11.5	3.9
The Anemias, Story of Diabetes	11.4	5.6
Maze of Superstition	9.7	6.7
Dental Science	9.4	3.8
Syphilis—"Shadow on the Land"	9.3	5.1
Immunity, Infections, Viruses	6.6	9.9
Child Health	6.5	9.1
Veterinary Medicine	6.2	21.1
Mental Hygiene	5.0	10.3
Medical Education	1.6	5.0

were to check, on a rating form, the exhibits at which they had stopped. On the form were listed the 26 major exhibits which had been rated by the professional workers, and beneath the list were the following structions:

"Of the exhibits checked above, please list the three exhibits you liked most and the three you liked least."

Spaces were provided for the choices.

Tabulation of their preferences, as shown in Table 3, indicates no direct overwhelming agreements. For only 8 exhibits did more than one-fifth of the spectators express a preference.* It would seem that judgments by laymen are also unreliable as criteria to judge the effectiveness of exhibits.

DO PROFESSIONAL WORKERS AND THE PUBLIC AGREE?

There was also considerable disagreement between the ratings of the professional group and those of the laymen. Of the former, 51.7 per cent rated the *Maternal Health* exhibit as best, but only 11.9 per cent of the laymen gave it the same rating. Similarly, 16.0 per cent of the laymen rated *Glands of Internal Secretion* as worst, whereas only 4.4 per cent of the professionals gave it the same rating. In rating another exhibit (*Tuberculosis*) 28.1 per cent of the laymen indicated it as one of the best, yet only 5.2 per cent of the professional raters made a similar selection.

Thus, there was disagreement among the professional groups constructing, using, and evaluating exhibits; among the members of the public for whom the exhibits were intended; and between those making the exhibits and those for whom the exhibits were made. What, then, is the value of ratings of this type in the evaluation of exhibits?

* As an example, 2,195 laymen rated the *Maternal Health* exhibit as one of the three best, but 1,531 others rated it as one of the three worst.

SUMMARY AND CONCLUSIONS

The increased interest in exhibits and their use for health education warrants an evaluation of their effectiveness if expenditures for exhibits are to be justified. An attempt at such an evaluation of the health exhibits at the New York World's Fair was undertaken in 1939. This paper reports the reliability of ratings as one technic of measuring the value of the exhibits.

In the study reported, 271 professional workers comprising public health personnel, educators, students of education or medicine, and professional exhibitors; and 18,449 lay spectators rated 26 major exhibits. The professional workers designated the three "best" and the three "worst," and the lay raters indicated the three "liked most" and the three "liked least."

On only one of 26 exhibits did as many as half the professional raters agree it was among the three best exhibits shown, and even that one was rated among the worst by 11 of the 271 judges. Only 6 others were rated similarly by as many as one-fifth of the raters. The ratings indicate that the raters' criteria were not consistently applied by the 271 individuals. There was no closer agreement when the ratings were tabulated by homogeneous professional groups (public health, educator, student, or exhibitor) than when they were by the total.

On only 8 of the 26 exhibits did as many as one-fifth of the lay raters express agreement in preferences. Apparently, judgments by laymen are also unreliable as criteria to judge the effectiveness of exhibits.

Consistent with the disagreements found in the professional and lay groups were the differences between the two groups of judges. The raters who normally construct, evaluate, and use exhibits did not agree with the lay public for whom they make exhibits.

With such disagreements among the

raters, it may be concluded that ratings are of little or no value in the evaluation of exhibits. Methods of evaluation which are more valid and reliable and depend more upon the behavior of the spectator must replace ratings, if the true value of health exhibits as educational media is to be appraised.*

Subsequent papers will describe the use of such technics of evaluation as: (1) timing the length of stay at an exhibit and checking it with the time required to read the legends, (2) checking the spectators' statements of the objectives of the exhibit, from viewing it, with the objectives as stated by the exhibitor, and (3) testing information and attitudes of spectators as they have been affected by exhibits. It is hoped that similar objective studies may be undertaken of the effectiveness of pamphlets, posters, movies, and other accepted health educational technics. Only thus can we assemble the evidence necessary to justify increases in budgets for popular health education.

* A few suggestions on exhibit technic arising from studies of spectator reaction have already been reported in this *Journal* for March, 1941.

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NEED FOR EXTENSION OF LOCAL HEALTH SERVICE

ATTENTION of JOURNAL readers is called to the report of the Association's Committee on Local Health Units. This report appeared in the April, 1943, issue of the JOURNAL, and is carried under the title, "Units of Local Health Service for All States." It is perhaps one of the most important and significant documents ever published by an Association committee. Here is a statesman-like plan for reasonably adequate local health service in all communities of the United States; a setting forth of broad general principles and objectives. The report represents thinking in terms of the whole and all of its parts, and heralds a consciousness that advance in quality and quantity of public health service rendered in the United States must no longer be limited to a nibbling and chipping process. It insists, too, upon local initiative and responsibility, and recognizes the importance of the private physician and of hospitals in providing public health services.

The committee which submits this report has been working diligently for a number of months. It has carefully analyzed the extent and character of local health service as it at present exists. It has set forth certain ideas which it considers basic and, with these in mind, and in conference with the respective state health officers concerned and with members of the medical profession, has laid down as a preliminary the estimated number of units which probably would be necessary for complete coverage in each state. The results of deliberation along these lines were presented graphically for the several states at the last Association meeting. These maps attracted a good deal of interest and aroused a lot of discussion, which is what was intended. The committee will continue its work by further conference with appropriate officers of state government and with representatives of state medical societies; will analyze existing state laws bearing upon establishment of local health services; and will study further the costs and personnel needs which should on the average be met in jurisdictions of one size or another.

The committee will, of course, encounter difficulties in the development of its program, but these are to be expected. Thus the committee advises adminis-

trative districts that would in some instances cut into and across existing civil jurisdictions. Members of state legislatures and local office holders are inclined to look upon this sort of suggestion as political dynamite, and will invoke in full measure the sanctity of tradition and local autonomy. Further difficulty will be encountered in obtaining legislation that will permit or require provision of health service as a function of local government. The permissive type of law is more readily passed by a state legislature, and in fact exists in many states, but it leaves much to be desired. With such a law, local authorities must first be persuaded to decide upon and pay for health service and from then on, even though performance is competent, the local service constantly stands in jeopardy of discontinuance because of local decisions which have but little to do with the merits of the case. No community would think of discontinuing schools because an influential local group disliked the Superintendent of Education, but this can happen and has happened in new ventures in public health. In contrast to the permissive legislation, a law requiring that local jurisdictions provide and expend money for local health purposes would be more difficult to get through the state legislature but this type of law is probably, in the last analysis, a very necessary instrument if health service coverage is to be complete and continuing. Finally, the plans of this committee will undoubtedly receive some opposition from some of the state health officers. Part of this will be justified and part of it unjustified. State health officers as a genus do not like to have persons in remote places, perhaps behind desks, tell them how to organize and administer public health work in their respective states. In many instances in the arguments that will ensue, this state health officer or that one will be right and the committee will be wrong, for the latter cannot know of all the complexities in each locality. Opposition on this basis will be constructive for, in the long run, divergence in detail as to districting, organization, and administration, will tend to prevent too rigid a pattern and stagnation. On the other hand, there ought to be no opposition to general principles if those principles are sound. On this point, one is encouraged by the background and character of the persons who make up the committee. They possess both technical knowledge and long administrative experience.

If the plan of the committee has any inherent weakness, it is that it visualizes only present conventional public health service, taking no cognizance of the fact that the health department of the future is quite likely to be concerned with medical service of one form or another. Health officers are loath to consider this for, while few of them can give undivided support to the thesis that all is well with today's medical care, most of them distrust measures tending toward a socialization of medicine. Further, they know from past experience that in any combination of medical service and conventional public health activities there is likely to be trouble in administering the first and a probable atrophy and disruption of the second. The committee may have been wise in avoiding this question, which is of itself a major issue. To include it certainly would complicate the picture, diffuse the objectives, and increase the opposition.

Be all these things as they may, we urge that JOURNAL readers become detailedly familiar with this report of the Committee on Local Health Units; that members of the Association become apostles for the general idea of complete coverage of the nation by adequate full-time local health service under government auspices; and that the committee continue its good work.

THE DEATH OF DR. A. GRANT FLEMING

DR. ALBERT GRANT FLEMING, Professor of Preventive Medicine and Public Health, McGill University, died in Montreal on April 9 after some months of illness. His death was not unexpected, but this does not lessen the sense of loss of those who knew him or knew of his work.

Dr. Fleming was President-Elect of the Canadian Public Health Association, and in the American Public Health Association he was a member of the Governing Council. In 1939 he served as Vice-President of the latter Association. In the last war he won the Military Cross for gallantry under fire, and at the time of his illness was scheduled to head the section of preventive medicine in the Canadian Army. He received the King's Jubilee Medal in 1935 and won the Coronation Medal in 1937. In the period 1936–1940 he was Dean of the Faculty of Medicine in McGill University, and since 1928 was Director of the Department of Preventive Medicine and Public Health in that Faculty.

This record and these accomplishments did not arise through accident, for Grant Fleming possessed a rare combination of medical competence and sound administrative ability. Exhibiting in finest measure the caution of the scientist and the vision of those who see beyond today, he was equally comfortable in laboratory and debate; and, endowed with an unusual personal graciousness, he could be forceful without dogmatism, could disagree without being disagreeable.

With our Canadian colleagues we share in the loss of a leader in the field of public health; and with the people of Canada we sympathize in the death of one of her public health statesmen.

THE U. S. PUBLIC HEALTH SERVICE IS COMMENDED

SOME two months ago there appeared in the *Washington* (D. C.) *Post* an article entitled "Crackdown on Vice Scatters Disease-Bearers." This was written by Agnes E. Meyer and is one of a series in which the author reports shrewdly and frankly upon conditions existing in centers of war activities. It is not, however, the series as a whole or the findings set forth in this article with which we are concerned, but rather with an excerpt from it. This is in reference to the U. S. Public Health Service, and is as follows:

"Mayor Devin's (Mayor of Seattle, Washington) words of gratitude to the United States Public Health Service expressed a feeling that has been growing steadily in my own mind as I traveled through the country. Wherever I have encountered members of this Federal department whether in central positions or in the most remote outposts of our social battle line, I have found such a uniformly high quality of character and ability, such passionate and fearless devotion to unending duties, that it seemed to me as if the highest manifestation of unselfish idealism is manifest today among the men of science."

Mrs. Meyer, who is the wife of the publisher of the *Post*, is known as one who does not make this sort of comment without careful and skillful weighing of evidence, and it is therefore particularly gratifying that she pays such a tribute to a great Service. Many of those engaged in public health work, and the federal government in particular, are inclined to take the U. S. Public Health Service for granted, tend too much to believe that it is just another government bureau; and Congress, under the pressure of military necessities, is likely to lose sight of how

competently and quietly the Public Health Service has met the multifold and complex problems imposed upon it by the war.

The qualities of skill and devotion to duty in these Public Health Service officers whom Mrs. Meyer met are to be expected. They have been carefully trained and thoroughly indoctrinated in the fine traditions of the U. S. Public Health Service. They are thus conscious not only of duty but of responsibility to maintain the justly-acquired prestige of the organization they represent. And, too, their very presence in the various mushroom communities in military and industrial areas of the country where Mrs. Meyer met them indicates forehandedness and intelligent planning on the part of the Surgeon General and his staff. Not only are these Public Health Service officers concerned with control of venereal diseases, but with malaria control, industrial hygiene, with measures directed against typhus fever and plague, with control of stream pollution, acute communicable disease control, with strengthening local and state programs against tuberculosis, and with the day by day task of building up ordinary routine health services. One encounters them, too, in Public Health Service research laboratories; as medical officers for the Coast Guard; in Marine Hospitals; and in a few unusual and distressing situations where the loss of physicians has created an emergency, one finds them temporarily rendering actual medical care.

The remarkable aspect of this participation of federal health officers in state and local health work is that there has been no complaint of invasion of states' rights, no usurpation of local authority, no friction. On the contrary, they have been requested, welcomed, and relied upon. They are well oriented as to the ethics and legalities of the situations in which they find themselves and of the limits of their authority as federal officers; and state health officers, through years of cordial relationship with the Public Health Service, have come to trust the wisdom and integrity of that Service.

We set these matters forth with two things in mind. The first is to concur in Mrs. Meyer's words of praise of the Public Health Service; and the second is to reëmphasize, to the medical profession and other public health workers and to the public, that this organization is the logical federal agency around which to build national health programs in both war and peace.

LETTERS TO THE EDITOR

To the Editor:

Under existing conditions with fluid milk shortages in the offing, it is more desirable than ever to have a uniform milk code to be able to shift milk supplies over a wide area. The *U. S. Public Health Code* is generally advanced for this purpose.

The main difficulties with the *U. S. Public Health Code* are no provision for the detection and elimination of thermophilic and thermoduric bacteria contamination of milk by dirty utensils and the lack of personnel and transportation for such farm inspection, and the lack of material and labor for such changes as the inspection would indicate. Also there is no guarantee that milk produced under adequate conditions would be of adequate quality.

The milk code of the Boston Health Department could serve. This code is based on continuous inspection of the quality of the milk as it arrives at the creamery, rather than on production conditions, as determined by one farm inspection a year.

1. A sample of each farmer's milk must be taken once a month and analyzed as follows:
   a. A Breed smear for approximate raw count and presence of udder infection.
   b. Laboratory pasteurized count—plated at 32° C.—for washing and sterilizing of equipment.
2. If the count is over 400,000 raw or 20,000 pasteurized, an official warning is sent the farmer.
3. A recheck must be taken in 10–15 days. If the 2d sample is high, the farmer is shut-off until a check sample is found to meet requirements.

In actual operation it is the responsibility of the country plant manager to visit the farmer after the first high count to insure against a second high count for a shut-off.

Centralized laboratory facilities could simplify the operation and supervision and reduce expenses. In most cases existing laboratory facilities can be converted to cover large areas adequately.

Any milk under 400,000 raw, 20,000 pasteurized and free from all udder infection as insured by laboratory analysis would meet approval from most milk inspection authorities.

Theodore Marcus, M.Sc.,
Dorchester, Mass.

THE following letters bring to a close the discussion of certain points, statistical in nature, raised by Mr. H. M. C. Luykx of New York University College of Medicine. Mr. Luykx' letter appeared in the April issue of the Journal.

To the Editor:

The comment of Mr. Luykx on the convention of attaching a measure of sampling error to a statistic by means of a ± sign, and his speculation concerning probable interpretation of it, is interesting from many points of view. There would probably be complete agreement that it should always be stated whether the measure following ± is a " probable error " or a " standard error." And there can be no question but that there is need for clearer understanding of how the error measures are correctly to be interpreted, particularly in view of the wholly erroneous statements repeatedly occurring in a very recent textbook on vital statistics. But there is likely to be conflict of

opinion on the view that "the use of the ± following an average is distinctly undesirable," especially when supplemented by the view that a careful reader would "make it his business to understand the meaning of standard error." The reader is not likely to become careful just because a ± sign is not there! Intellectual laziness may indeed be encouraged by a sign which obviously indicates an error range of some sort, but surely only in those not likely to be aroused by the presence of a substitute expression.

The question to this writer frames itself somewhat in this way: Isn't there more to lose than to gain by dispensing with a sign which even the uninitiated realize immediately indicates a measure of uncertainty? His personal opinion at present is definitely in the affirmative. But let us be careful to define our measures and to understand them, without which no form of statement will be of much avail.

ALAN E. TRELOAR,
Associate Professor of Biostatistics, University of Minnesota Medical School

TO THE EDITOR:

Several points are raised by the comments of Mr. H. M. C. Luykx.

1. The "Epidemiologic Note" in the January issue of the *American Journal of Public Health* stimulating the comment of Mr. Luykx has been taken from material in the summary of the original article appearing in the November 14, 1942, issue of the *Journal of the American Medical Association*. Discussion of statistical procedure should have been directed preferably to the author, who knows best of all what he did and why, or at least to the organ publishing the original material.

2. Had Mr. Luykx reconstructed the calculations based on the data presented in the original article, he would have found the ± attachment to be the *standard* error of the mean and *not* the *probable* error on which the commentator makes so detailed an explanation.

3. It is a well known fact that the standard error is a more acceptable measure than is the probable error. For that reason common agreement almost tacitly assumes a ± attachment to be the standard error without so designating it. The user of the probable error, because he is departing from accepted procedure, carries the burden of an explanation. In the illustration at issue the observer is well within accepted practice. However, because, as Mr. Luykx points out, there are some readers who could be misled, it might have been desirable for the author to have stated, perhaps in a footnote, that the ± attachment used was the standard error of the mean.

4. Since Mr. Luykx believes the ± attachment is usually the probable error and has made his comments on the interpretation of the probable error, in order not to mislead the reader who participates in this controversy I shall continue with the probable error. I accept the comments offered by Mr. Luykx in his third paragraph, stressing, however, that the average of 12.2 days is the *obtained* or *observed* mean. With the *one* probable error attachment the *true* average lies somewhere between 11.1 days and 13.3 days on odds of 1 to 1. On odds of 22 to 1 the true average lies somewhere between 8.9 days and 15.5 days which are the limits set by the obtained mean of 12.2 days and three probable errors [$12.2 \pm 3\ (1.1)$].

5. I do not accept the comments offered by Mr. Luykx in his fourth

paragraph. The ± 1.1 days are a constant calculated from the *observed* mean of 12.2 days and should not be used with any of the limits set by this observed mean and its ± attachments such as to the 8.9 days or the 15.5 days, as if these limits again were *observed* centers or means. The ± 1.1 days belong to the observed mean of 12.2 days. The statement made by Mr. Luykx actually describes the limits set by the observed mean and *six* probable errors [12.2 ± 6 (1.1)]. The error measures are attached to observations. The ± 1.1 days describe the amount of fluctuation inherent in sampling, the amount which by chance alone one can expect the observed mean of 12.2 days to vary.

Sampling errors, preferably *standard* errors should be stated with their observed measures. As long as there is a remote possibility for confusion it might be desirable to mention whether a ± attachment is the standard or the probable error with a statement that the *observed* measure and its attachment sets the limits within which by chance the *true* measure will lie. However, I believe, the reading public is becoming sufficiently conscious of sampling and of the use of a ± attachment as referring to the standard error that a detailed explanation is unnecessary. The uninformed but interested reader will consult the reference for that explanation, thus relieving the observer of the responsibility of incorporating statistics instruction in his article.

MARGUERITE HALL, PH.D.,
Assistant Professor of Public Health Statistics,
School of Public Health, University of Michigan

TO THE EDITOR:

Mr. Luykx appears to dislike the use of the "±" notation to indicate the measure of sampling error to be attached to a statistical constant. Except for the fact that this notation is sometimes used for other kinds of errors, this writer sees no objection to it. Certainly it should be clearly indicated what measure of sampling error follows the "±." It is not apparent why one might prefer the standard error (S.E.) to the probable error (P.E.), except that the latter requires the additional step of multiplication by .6745. Since the limit of sampling error is often taken as 2 S.E. (or 3 P.E.), it would be in harmony with this usage to attach this measure.

As Mr. Luykx says, working on the assumption of a normal sampling distribution, the true value of the corresponding statistical constant of the universe may readily differ from that observed by as much as 3 P.E. in either direction. It does not follow that the constant for another comparable series of observations can differ as readily by 6 P.E. from that observed. Indeed, if another series gave us the same P.E. (as it should *theoretically*) then P.E. of the difference would be $\sqrt{\text{P.E.}^2+\text{P.E.}^2}$ or P.E.$\sqrt{2}$ and a difference of 3 P.E.$\sqrt{2}$ or 4.24 P.E. might be adjudged significant.

JOHN W. FERTIG,
Professor of Biostatistics,
De Lamar Institute of Public Health, Columbia University

REPORTS OF COMMITTEES

The By-Laws of the American Public Health Association provide that no standards shall be promulgated as the official and authorized judgment of the Association except with the approval of the Governing Council. Except where specifically noted to the contrary, the following reports are in the nature of progress reports from committees, most of which have had Section approval, but which have not been presented for Governing Council action, and therefore are not to be interpreted as standards approved by the American Public Health Association.

Disinfection of Dishes and Utensils

Engineering Section

YOUR committee on the washing and disinfection of dishes and utensils submits herewith a brief progress report of such work as it has been possible to do under adverse conditions this year.

Last year the committee reported on a survey of dishwashing machines as they were being operated in public eating establishments. The report showed a general lack of uniformity in turning out visually and bacteriologically clean dishes. This was not surprising in view of the observed lack of control of wash and rinse water temperatures, the times of washing and rinsing, and the concentrations of detergent.

Among other things, further study was suggested to determine the optimum ranges of these and other factors that would tend to give more satisfactory efficiency of operation. The data obtained served to emphasize the importance of controlling these important factors within certain limits.

In continuing work this year, the committee planned to develop a standard soiling material consisting of mixed foods that could be applied to standard dishes with a view to having the percentage removal of such soil indicate the degree of effectiveness of the washing operation. It was desired to make this soil just difficult enough to remove so that the dishes containing it, when properly racked in a good machine functioning as it should with fresh wash water at optimum temperature and containing a fair concentration of a good detergent, would lose the soil in 1 minute.

Using such dishes intended to be uniformly difficult to clean it should be possible, with a machine especially equipped to permit changing temperatures and other factors at will, to study the effect of varying each factor while maintaining the others constant. The amount of soil remaining could be determined approximately by comparison with a set of standard dishes containing fractions of the amount of soil placed on the test dishes.

Such dishes also should serve to show a comparison between the efficiency of various dishwashing machines as operated in public eating establishments. Valuable information also could be obtained by comparing such results with those secured in the same ma-

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COMMITTEE ON DISINFECTION OF DISHES AND UTENSILS.
Organized 1938. Published reports: *Year Books* 1939–1940, 1941–1942.

chines under more favorable operating conditions.

Most of the limited time available this year has been devoted to experimenting with combinations of foods to make a soil to fill this specification and with methods of drying such soils uniformly.

It became apparent that greases could be removed readily by hot water alone as could such substances as egg, milk, and flour unless very thoroughly dried. At first drying was done in an oven at 105° C. for 1 hour.

Tests showed drying to be quite a critical factor. Tests with plates in similar positions, other factors being constant, showed variable results. Considerable work was required to get uniform drying throughout the film on each dish and uniformly on every dish. Oven drying, even with agitation of the air by a fan, did not prove satisfactory. Finally a device was made to introduce a large volume of air heated to about 135° C. tangentially into a cylindrical chamber of slightly larger diameter than the dish to be dried and just below the soiled surface of such inverted dish. Dishes dried in this manner for 2, 4, and 6 minutes respectively showed little variation. A drying time of 4 minutes at this temperature appears to give satisfactorily uniform drying after the soil has dried overnight at room temperature. This is time consuming as each dish must be treated separately.

When the drying factor was variable it was impossible to standardize the soil. With that factor now fixed it should be possible to develop a satisfactory soil in a short time to permit work along the designated lines to be undertaken during the coming year.

The work this year also included some observations of dishwashing machines in operation with a view to determining weaknesses both in construction and operation. Some of the outstanding points are discussed below.

Most wash tanks are not so designed that all surfaces can be easily cleaned. The immovable superstructure frequently interferes with the operator reaching and viewing the inner surface of the tank. There are sharp angles to hold dirt and obstructions such as tray or belt conveyor angle irons, pipes, and bolts. Particles of putrescing food adhering to the walls of the tank when it is emptied pollute the next batch of wash solution.

The design of pumps also is such that they cannot be cleaned easily and they also contribute to the collection of decaying food solids.

The use of easily disassembled sanitary pipe lines also would improve conditions by making it easier to keep the pipes and jets clean and functioning properly.

A number of instances have been observed in which the hand operated valve controlling the supply of water to the wash tank was leaking badly. These valves often are placed so that the handle projects into the working space where it is bumped by trays or other objects. The wheel handles are broken off and the stems become rounded so that the handle slips, making it difficult to close the valve tightly. The valve seats also corrode. On one machine the valve was in such condition that the operator could not close it and a stream of water ran continually through the wash tank. Under these conditions the detergent added was promptly diluted beyond the point of usefulness. A large quantity of hot water also was wasted. The use of good valves such as stainless steel seated globe valves on these water lines properly placed to protect the handles would improve conditions.

Some washers have revolving spray arms mounted on brass bearings. Sometimes these bearings bind, resulting in poor coverage of the dishes. In

other instances they become so worn that the leakage reduces jet pressure and volume.

The size and area of spray slots and jets vary considerably in different machines. Some jets are as small as ⅛ in. in diameter or 0.012 sq. in. in area, while at the other extreme some slots are as large as ¾ by 3/32 in. or 0.07 sq. in. in area. Small jets may serve the purpose of building up pressure at the jets but they clog too easily.

In one single-tank machine the fresh water rinse jets were found badly clogged. The dishes although showing an alkaline residue looked fairly clean. The rinse spray jets were cleaned and the dishes came out noticeably dirtier rather than cleaner than before. The explanation is that the greater volume of rinse water from the cleaned rinse jets diluted the detergent to such an extent as to make washing ineffective. It also may have raised the temperature of the wash water above the optimum.

Strainers usually are cumbersome and hard to remove and clean. As a result they often become bent or broken allowing food particles to enter the pump spray lines where they tend to clog the spray jets.

Some single-tank machines depend upon the hot rinse water and sometimes on an auxiliary gas burner to maintain the temperature of the wash water. As jets clog the quantity of rinse water decreases and temperature drops. Auxiliary gas burners generally do not have sufficient capacity to compensate for normal heat losses. In one machine the operation of the wash sprays for 1 minute caused a drop in temperature of wash water of 5° F.

This is simply a cross-section of some of the weak points of dishwashing machines that have been observed.

With this summary of the work and observations of the year we suggest the continuation of these investigations and make the following recommendations which are in accord with those made last year:

1. That minimum satisfactory time intervals for washing and for rinsing under fixed operating conditions be determined and that as soon as practical new machines be built to insure such periods.
2. That optimum temperature ranges for washing and for rinsing be determined and when feasible new machines be equipped to maintain such temperature automatically.
3. That new machines be designed to prevent excessive dilution of the detergent in the wash water and more satisfactory methods be devised for maintaining the concentration of detergent.
4. That more attention be given to sanitary construction and ease of disassembling machines for cleaning.
5. That further studies be made along the lines herein suggested to determine if possible just what dishwashing machines are accomplishing or failing to accomplish in the cleaning of soiled dishes.

The committee wishes to acknowledge the active assistance of Clarence W. Weber in testing and observing equipment.

W. D. TIEDEMAN, M.C.E., *Chairman*
J. D. CALDWELL
F. CLARKE DUGAN, C.E.
A. W. FUCHS, C.E.
WILLIAM T. INGRAM

Microbiological Examination of Spices, Fermented Foods, and Fruit Juices*

Food and Nutrition Section

THE committee has continued the program of bringing together each year a few practical methods for the examination of foods with a view to compiling eventually enough material for a publication on Standard Methods for the Microbiological Examination of Foods.

Microbiological Examination of Spices

The bacteriological examination of spices is important since they are used as ingredients in many types of prepared foods. It is known that most types of spices are very high in bacterial count [1] and thus may contribute to the spoilage of the food products in which they are used, as for example, in such products as meats of low process such as luncheon meats, sausages, etc.[2] It is because of the importance of such spoilage problems that the committee believes that a standard method for the bacteriological examination of spices should be proposed.

Spices may be divided into "whole spices," such as allspice, cloves, cinnamon sticks, etc.; "ground spices," such as pepper, coriander, ground cloves, etc.; and spices of bulky nature such as bay leaves, herbs, sage, etc.

METHOD

Sampling—Take a 50 gm. sample from each of three containers and pack carefully in glass jars to prevent loss of oil, and send to laboratory.

Preparation of Samples for Culturing—Weigh spices on sterile paper or directly into the dilution flask in a dust-free room or cabinet. Due to differences in bacterial counts, bulk and character the following amounts of spices are recommended:

Whole spices	10 gm.
Bulky spices	2 gm.
Ground spices	1 gm.

Add sterile water to spice to 100 ml. mark and shake vigorously for 5 minutes. Allow coarse material to settle out and use appropriate dilutions in various media.

Making Bacterial Counts—Counts should be expressed as numbers of bacteria, molds, spores, etc., per gm. of spice.

a. Total bacterial count:
   Use either nutrient agar (Difco) or Brom-Cresol Purple-tryptone-glucose agar (Difco) and incubate for 48 hours at 37° C. and 55° C.

b. Acid-tolerant bacteria and molds:
   Use wort agar (Difco) and incubate at 25° C. or room temperature for 5 days.

A special agar of the following formula may be used for the detection of *B. thermoacidurans:*

I. Proteose peptone	5 gm.
Yeast extract	5 gm.
Glucose	5 gm.
K_2HPO_4	4 gm.

Dissolve above ingredients in 500 ml. of distilled water and adjust to pH 5.0 and autoclave.

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* Report of the Committee on Microbiological Examination of Foods.

COMMITTEE ON MICROBIOLOGICAL EXAMINATION OF FOODS.
Organized 1932. Published reports: *Year Books* 1935–1936, 1937–1938, 1941–1942.

II. To another 500 ml. of distilled water add 20 gm. of agar and autoclave.

Mix the contents of flasks I and II just prior to use.

Incubate plates at 37° C. and 55° C. for 2 days.

Detection of Spores—Boil spice suspensions for 5 minutes and make up loss due to evaporation with sterile water. Plate appropriate dilutions using: (A) Brom-cresol purple-tryptone-glucose agar and incubate at 37° C. and 55° C. for 2 days. Report total spore count, flat sour spore count and non-flat sour spore count; (B) For the detection of spores of aerobic gas producing bacteria use Jensen's medium * and incubate at 37° C. or 48.9° C. for 5 days. (More rapid gas production will be obtained at the higher temperature.)

Anaerobes

a. For putrefactive anaerobes use liver broth medium [4] stratified with agar and incubate at 37° C. for 5 days;

b. For thermophilic anaerobes not producing H_2S use liver broth medium [4] stratified with agar and incubate at 55° C. for 48 hours. The liver broth should be freshly exhausted prior to use.

c. For thermophilic anaerobes producing H_2S use the following medium (a modification of [5]):

Tryptone, Difco	10 gm.
Na_2SO_4	1 gm.
Agar	20 gm.
Water	1,000 ml.

After the above ingredients have been dissolved by boiling, add 10 ml. of a 5 per cent solution of ferric citrate. Tube in 10 ml. amounts and autoclave at 15 lbs. pressure for 30 minutes. Use appropriate dilutions of spice and incubate at 55° C. for 48 hours.

* Jensen's Medium: Fill culture tubes half full with finely ground or chopped spiced ham (from a sound can) and wet down with solution made of 0.4 per cent sodium nitrate and 2 per cent sucrose. Autoclave at 15 lbs. pressure for 15 minutes.

NOTE: (a) No trapped bubbles of air should appear in the medium. (b) Medium should be covered with at least ¼ in. of water. (c) Tubes should not be more than half filled.

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4. Cameron, E. J. Report on Culture Media for Non-Acid Products. *J. Assoc. Official Agr. Chem.*, Aug. 1936, pp. 433–438.
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Microbiological Examination of Fermented Foods

There are a number of different types of fermented foods which might be considered under this heading. The methods to be discussed in this section do not deal with dry products which have undergone fermentation during preparation, such as coffee, tea, cocoa, etc., nor with fermented beverages such as beers, wines, etc. Rather they apply to fermented products such as sauerkraut, pickles, olives, and okra either as raw or as processed products. Of these, sauerkraut is the only one which is not materially changed after the fermentation process, that is, by sweetening, spicing, or similar pickling change.

Sauerkraut is normally sold as a processed food or as a raw product. It may be abnormal in several ways some of which may lead to an abnormal microbial flora. Usually such conditions are caused by faulty salting or improper temperature of fermentation, and may cause an improper acid development. With this in mind it seems essential that after superficial examination of the food, analysis for total acidity and salt should be made.

The more common undesirable microbial changes occurring in fermented foods are due to yeasts. Since excessive numbers of yeast cells, mold hypha, or Gram-negative rods are indicative of an abnormal condition, a microscopic examination of a Gram-stained preparation is desirable.

The direct miscroscopic method

(*Standard Methods of Milk Analysis*, 8th Ed., 1941, pp. 40–53) should be used. Brine from the product should be mixed, and a 0.01 ml. sample spread over a 1 sq. cm. area. After drying, the preparation is fixed with heat and stained with Gram's stain. A high count of Gram-positive rods and cocci should be expected and is desirable, since they are the bacteria responsible for a normal fermentation. A high yeast count or presence of mold hypha is indication of faulty conditions such as excess salting, exposure to contamination from the air, or drying of the surface.

The total plate count has little significance in indicating the condition of raw kraut. It is used primarily for isolation of organisms from the kraut but it may also be used to study the types of colonies developing upon the plate.

Processed kraut or pickles sometimes may be given too little process or may become recontaminated. Plating may be used to demonstrate this contamination.

Processed sauerkraut or pickles should contain no microörganisms. The raw products will contain large numbers of organisms, the colonies being small, gray white, round, 1–3 mm., or lens-shaped subsurface colonies or larger, 3 mm. surface colonies. The presence of larger white or cream-colored colonies or smaller colored colonies indicates an abnormal product.

PLATING METHODS

All equipment (pipettes, dilution bottles, Petri dishes, hot air ovens, autoclaves, thermometers, incubator, water, peptone, agar, and sugar) used for bacteriological examination of juice should meet the specifications of the A.P.H.A. *Standard Methods of Milk Analysis* (8th Ed., 1941, pp. 16–22). Yeast *

	Per cent
Agar, best quality, granulated or shred	1.5
Yeast extract, Bacto or equivalent	0.3
Tryptone, Bacto or equivalent	0.5
Glucose	0.1
Water, distilled	
Adjust reaction to pH 6.6 to 7.0	
Sterilize in an autoclave	

extract should be used rather than beef extract.

Plating—Melt the agar in an autoclave, in flowing steam, or in boiling water. Cool to 41–42° C. and hold at this temperature until ready to pour into Petri plates.

The juice of the fermented product should be mixed thoroughly, especially from top to bottom.

For processed food prepare Petri plates in duplicate containing 1 ml. and 0.1 ml. of juice.

For raw products plate at dilutions of 1:10,000 up to 1:1,000,000. Pour approximately 10 ml. of agar in each plate and mix by rotating gently. Cool, invert plates and incubate at 32° C. for 48 hours.

* Use tryptone-glucose-yeast extract agar of the following composition:

Microbiological Examination of Fruit Juices

The processing of fruit juices is a relatively new industry in many ways but one which will require close supervision in order to control the quality of the products. Control of quality is essentially a control of cleanliness and handling of the food in the plant.

METHOD

The agar plate method of examination of fruit juices may be an aid in determining the quality. The method for estimating microorganisms consists of counting the microbial colonies or growths which develop upon a nutrient agar plate after mixing and incubating a suitable dilution of the juice. The colonies are counted after incubating for 72 hours at 32° C.

All equipment (pipettes, dilution bottles, Petri dishes, hot air ovens, autoclaves, thermometers, incubator, water, peptone, agar, and sugar) used for bacteriological examination of juice should meet the specifications of the A.P.H.A. *Standard Methods for the Examination of Dairy Products* (8th Ed., 1941, pp. 16–22). Yeast extract should be used rather than beef extract.

Use tryptone-glucose-yeast extract agar of

the composition given under fermented foods and/or a more acid medium as suggested for *B. thermoacidurans*.

Plating—Melt the agar in an autoclave, in flowing steam, or in boiling water. Cool to 41–42° C. and hold at this temperature until ready to pour into Petri plates.

From the viewpoint of method of examination and of interpretation of results, fruit juices should be considered as of three types: (A) Pasteurized, (B) raw, and (C) frozen or cool storage.

Pasteurized juices should be relatively free of microörganisms.

Before opening, examine the container, the contents of the container, as well as the closure for signs of fermentation or mold growth. Abnormal cans may show loss of vacuum or even hydrogen swells. Bottle caps may bulge due to fermentation.

Mix the contents by inverting several times.

Open bottles while passing a flame over the cap.

Open cans after burning alcohol over the top.

With a pipette delivering 1.1 ml., prepare in duplicate, Petri plates containing 1 ml. and 0.1 ml. of juice.

Pour approximately 10 ml. of agar in each plate and mix by rotating gently. Cool, invert plates, and incubate at 25° C. for 72 hours.

Raw juices will always have much higher counts of microörganisms.

Observe juice for fermentation or for mold growth.

Mix the contents by inverting if in bottles, or by stirring if in larger containers.

Prepare dilutions from 1:100 up to 1:10,000 in duplicate in Petri plates. Pour agar, rotate, cool, and incubate as directed above.

Frozen or cool storage juice when freshly packed might be considered as raw juice. During storage certain types of microörganisms die, while others accustom themselves to low temperatures.

Examine the surface of the juice for mold growth. Thaw and mix the juice immediately. Plate at dilutions of 1:100 to 1:10,000. Pour agar, rotate plates, cool, and incubate at 21° C. for 5 days. Better results will be obtained at this temperature on frozen and cool stored juices. Examine after 2 days and 3 days, and count the plate if it becomes apparent that mold or spreading bacterial colonies may spread over the plate.

INTERPRETATION OF RESULTS

Counts on pasteurized juices must necessarily be low in order to insure keeping quality, but spore-forming bacteria and mold spores often survive pasteurization, especially if the products have not been handled properly. Plate counts up to 5 per ml. may be expected. Mold or bacterial colonies in excess of 10 indicate faulty washing of fruit and cleaning of equipment, or inadequate processing.

In raw juices the total number of organisms is an indication of the cleanliness of equipment as well as the age of the juice. Total counts in excess of 100,000 per ml. may indicate growth during the handling of fruits. High mold or bacterial counts are indicative of poorly cleaned equipment. A high yeast count is an indication of fermentation.

Frozen products are similar to raw juices, although a reduction in count should follow prolonged storage. An excessive yeast count may indicate growth of yeast during a slow freezing operation. Occasionally mold growth or yeast growth may take place during cool storage if the temperature rises somewhat.

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A New Method for Measuring the Quality of Urban Housing

A Technic of the Committee on the Hygiene of Housing *

THREE years ago the committee undertook to develop a method of measuring the quality of housing in urban slums. The direct stimulus for the committee's work in this field of appraisal was a number of requests from public health officials that we translate the substance of our "Basic Principles of Healthful Housing" into a yardstick of housing deficiencies, as a basis for enforcement work in problem areas. Although other survey procedures have been developed for city-wide application—such as the standard real property inventories and the 1940 Housing Census—more intensive methods are clearly needed for limited areas which are known to be generally substandard or of marginal quality.

The dramatic slums of any community are likely to be well known in a general way, but this is not enough. Effective programs of control (or postwar rehousing on the scale generally anticipated) will require closer definition and measurement of substandard housing than is possible with present appraisal methods. Such definition and measurement is needed both to delimit the problem areas, to evaluate their deficiencies, and to indicate whether a solution lies in the direction of law-enforcement, demolition and rehousing, or ultimate conversion from residence to other uses. The standard city-wide survey technics are not designed to provide this type of information.

Although relatively close measurement is needed, this does not mean a researcher's type of survey, turning out bushels of tabulations and acres of maps on every aspect of the problem that might conceivably be of interest to other research workers; rather it means an administrator's inventory, producing only the data needed for policy-making and concrete action—and these data in concise graphic form that will command the attention of already overburdened public officials.

The committee believes that appraisals of a type which will answer basic questions of housing policy can be made by the permanent inspection staffs of health departments and other city agencies concerned with housing. If so, the procurement and interpretation of essential housing data can become a regular function of city governments rather than a job to be done at those rare intervals when special research funds and personnel may be available.

American cities devote thousands of man-days every year to housing inspection service in their slums, but it is a rare community in which this effort provides usable answers to the questions on which a long-term housing program must be built. Such questions, for example, as: Just what is the size and nature of the extreme slum areas? How much worse is district A than dis-

* Adapted from a paper presented for the committee by Allan A. Twichell, Technical Secretary, at the Seventy-first Annual Meeting of the American Public Health Association, St. Louis, Mo., October 28, 1942.

trict B, and in what respects? How many dwellings should be designated unfit for habitation, and either demolished or rehabilitated? Aside from the condition of dwellings, are the problem areas, as neighborhoods, fit to live in?

An experienced city manager has recently pointed out some of the chief reasons why traditional methods of housing inspection fail to supply the needed answers.[1] He cited the common practice of inspecting only on complaints, the waste of effort through unnecessarily overlapping inspections, and the absence of an official minimum dwelling standard to which both enforcement and rehousing programs might be related. Other limitations can be added. Forms and records are seldom designed to be useful or understandable to others than the inspection agency. There is usually no central clearing-point for essential housing data. Often too little thought is given to summarizing inspection findings as a measure of the total problem in areas which are large enough to be significant for planning.

The Committee on the Hygiene of Housing has sought to overcome these limitations in its method of inspection and evaluation. This method has been developed and tested by a Subcommittee on Appraisal of Residential Areas, under the leadership of Rollo H. Britten of the U. S. Public Health Service.* The principal test surveys have been made in New Haven, Waterbury, and Stamford, Conn., in coöperation with public health, housing, and city planning agencies of these cities, and with both technical and financial help from the Connecticut Department of Health. The object of the following discussion is to describe the appraisal method thus developed, to illustrate the type of results it will produce, and to sketch its implications for local housing policy.

THE COMMITTEE'S APPRAISAL TECHNIC

The central purpose of the committee's method is to make it possible, by assigning a part of inspectorial energies to the systematic appraisal of known problem areas, to measure the quality of housing in a way which will serve the policy-making purposes of all local agencies concerned with housing. The principal features of the technic are as follows:

1. It reports and evaluates housing deficiencies which may adversely affect health, safety, or essential livability.

Factors covered for dwellings include water supply, sewage disposal, toilet and bathing facilities, condition of repair, safety of egress, adequacy of daylight, type and distribution of heating facilities, sanitary condition of the premises, completeness of landlord services in multiple dwellings, room sizes, overcrowding, rent, family size and composition, and family income. In presenting the results, distinction is made between relatively fixed physical conditions and the changeable factors of occupancy and maintenance, since remedial action must recognize these characteristics.

2. The neighborhood environment, largely ignored in previous survey methods, is recognized as an essential element in housing adequacy.

Neighborhood criteria include crowding of land by buildings, industrial and commercial uses intermixed with residence, hazards associated with streets and nearby railroads, adequacy of public utilities, and availability of essential community services: schools, transportation, parks and playgrounds.

3. The quality of housing is measured by a tested system of numerical scores.

Scores are expressed in terms of the dwelling conditions, neighborhood characteristics and these two combined. Instant comparisons of quality are thus made possible as between blocks or groups of blocks, individual dwell-

* Other personnel of the subcommittee: Frederick J. Adams, F. Stuart Chapin, Andrée Emery, Alfred H. Fletcher, L. M. Graves, M.D., Maynard W. Meyer, Robert B. Mitchell, M. Allen Pond; Allan A. Twichell, Secretary, Anatole Solow, Research Associate.

ings, types of dwellings, or other wanted categories.

4. Clear, well designed forms are provided for data collection. Systematic procedures for analysis and graphic presentation of the significant findings are an integral part of the technic.

Items calling for subjective judgment by the inspector have been replaced by those of an objective, measurable type which will give consistent results from different enumerators. Sampling is used when this is appropriate to the purposes intended.

5. The method is suitable for execution by the regular personnel of city departments, after brief instruction.

The appraisal of dwelling conditions is particularly adapted for execution by the inspection and clerical staffs of local health or building departments. The survey of neighborhood characteristics can be made by the staff of an active city plan commission, or under the direction of a sanitary engineer or the technical director of a housing authority. Either the dwelling appraisal or that of the environment can be made alone, but the soundest results are obtained when both are made, for only the combined results give a true picture of the total housing problem.

The scoring system is the distinctive feature of the method, and lies at the heart of its effectiveness. The obvious value of a scoring system is that it *measures* total quality and expresses this measurement by a convenient index figure. There is almost no kind of analysis of housing data which is not tremendously facilitated by the use of scores. But the scoring system must be sound. Much of the committee's work during the period of development has gone into tests of the scoring method. This testing has convinced the committee and numerous outside critics that the present rating scales are accurate differentiators of housing quality.

The scores consist of penalty points assigned to conditions which fall below reasonable standards. These standards, largely derived from the "Basic Principles of Healthful Housing," have been checked with local officials as to their reasonableness for enforcement or other official purposes. Scoring is done from the completed schedules in the office rather than in the field, for it is believed that the enumerator should report conditions only, and should not complicate either his work or his attitudes by the assignment of ratings. While the standard rating scale is believed applicable in most particulars to any American city, it can easily be modified to fit local or regional conditions, since the rating forms have been developed separately from the enumeration schedules.

The recommended rating scale provides penalties for various deficiencies ranging from 1 to 30 points, depending on the seriousness of the conditions as a threat to health, safety, or essential livability. "Basic Deficiencies"—conditions any one of which may make a dwelling substandard for enforcement or rehousing purposes, such as totally inadequate fire-escapes or the absence of inside toilets—are counted separately as a kind of auxiliary score.

Under this scheme, dwellings and neighborhoods which are essentially up to standard will show penalty scores of 0 points. Extreme slum sections in the cities of our test surveys have incurred total dwelling penalties of 200 points or more per dwelling unit, with characteristic total scores for the neighborhood environment running around 125 penalty points per block or street frontage.[2]

A JOINT STUDY TO SHAPE OFFICIAL POLICY

The technic was originally intended for execution by local health departments. It soon became evident, however, that such a method could serve the needs of other bodies too, and that it would be most valuable when car-

ried out jointly by a group of local agencies. This coöperative approach is well illustrated in the most recent demonstration survey, now being concluded in the Southwest District of New Haven, Conn.

This district takes in about one-fifth of the city's developed area and houses 42,000 of its 160,000 persons. It includes extreme slums, areas of problematic quality, and fringes of clearly self-sustaining neighborhoods. The health, building, and fire departments recognize the district as one of excessive inspection and enforcement burdens. The housing authority desires to find sites there for post-war housing projects. The city plan commission has undertaken a replanning study of the district, and wishes also to delimit clearance areas for enlargement of a terminal market and warehouse district. And the social agencies are wondering whether the housing future of the district will warrant investment in certain additional community center facilities.

In this area of diversified problems a joint appraisal has been sponsored and conducted by the committee and five governmental agencies: the local Health Department, City Plan Commission, and Housing Authority; the State Health Department; and the U.S. Public Health Service. The purpose of the study is to lay the groundwork for a coördinated long-term program of housing enforcement, replanning and reconstruction for the district. Personnel or funds were supplied by each of the sponsors, and the work has been directed by the committee's staff. The interests of the several sponsors and their responsibilities have been set forth in a formal working agreement. It is thought by the partners in the undertaking that this "memorandum of understanding" may provide a pattern for a most fruitful type of joint attack on local housing problems.

After a preliminary screening study of the 1940 Housing Census data, seven sample areas totaling 35 blocks were selected for appraisal.* These groups of blocks were chosen to represent the range from thoroughgoing slums to neighborhoods clearly free from serious housing problems. Fifty per cent of the 2,500 dwelling units in these blocks were inspected, and 30 of the blocks were completely surveyed for environmental characteristics. The accompany figures give some highlights of the findings.

FIGURE 1

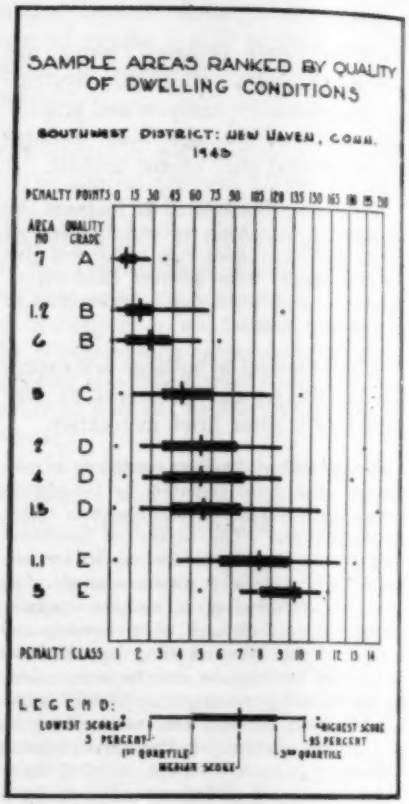


Figure 1 shows the quality of dwelling conditions (excluding environmental

* For purposes of analysis sample area 1 was later subdivided into three sub-areas (1.1, 1.2, 1.3), giving the nine areas of Figure 1.

characteristics) in the sample areas, and illustrates how the technic measures the range of over-all conditions from one area to another.

At the top of the figure is indicated the range of total penalty scores incurred by all dwelling units—from 0 to 208 points. This range is divided into penalty classes of 15 points each, as shown at the bottom of the chart. Units with total penalty scores of less than 15 points fall in penalty class 1; those with penalties of 140 points in class 10, and so on. The solid horizontal bar for each sample area represents the range of scores for 90 per cent of its dwelling units, and the scatter of 5 per cent of the cases at either end of the scale is shown by a terminal dot. The score of the median dwelling unit for each sample area is shown by a vertical bar; scores at the first and third quartiles are shown by breaks in width of the horizontal bar.

Thus, for example, the highest grade sample area (No. 7 at the top of the chart) shows a range of penalty scores from 0 to 38 points, but its median dwelling unit has a score of only 10 points. Fifty per cent of the units (from first to third quartile) show total penalties between 6 and 17 points; 90 per cent have scores between 2 and 28 points.

The chart reveals the relative quality of the sample areas at a glance. Two extremely poor areas show at the bottom of the figure; one quite good and two fairly good ones appear at the top, with four of distinctly worse quality between. These areas have been classified into five quality grades, from A to E (as given at the left of the chart), according to the penalty class and the number of basic deficiencies shown by the median dwelling unit for each area.

As a generalization for the present study, we may take the break between grades C and D as a rough dividing line between areas of more or less passable dwellings and those in which general corrective action by city departments will be needed. Over fifty per cent of the dwelling units in grade D areas are substandard in the sense that they show one or more basic deficiencies as defined by the local sponsors. In the less bad of the two grade E areas, 94 per cent of the units have one or more basic deficiencies and 31 per cent show four or more. Further analysis indicates that grade E areas are clearly beyond acceptable rehabilitation of their present housing on any economic basis, and that housing of grade D is full of problems for the agencies charged with enforcement or rehousing.

Some of these problems are indicated in Figure 2. This gives the distribution of salient housing deficiencies, for the sample areas grouped by quality grade. Thus, while Figure 1 *measures* the range of the problem, Figure 2 *describes* the problem in various parts of the range. Here selected environmental factors have been included with the dwelling characteristics.

Although room crowding is not the chief difficulty of this district, a considerable problem of overcrowding abatement is indicated by items 21 and 22 of Figure 2. Areas of grades D and E show from 42 to 69 per cent of their dwelling units with physical defects which usually cannot be remedied without expensive or impracticable structural changes (items 8, 9, and 13). Over one-third show extreme disrepair (item 18), serious daylight obstruction by adjacent structures (item 5), and inadequate room sizes (item 15), the latter two at least being usually curable only by demolition. Separate analysis of D and E grade areas, of course, shows considerably higher deficiency rates in the latter than the figures given here.

Environmental characteristics shed additional light on the difficulty of rehabilitating such low-grade areas to meet contemporary housing standards. Fifty-eight per cent of the street frontages in grades D and E have a very

FIGURE 2

Selected Deficiencies of Dwellings and Neighborhood Environment

Sample Areas Grouped by Quality Grade

Southwest District, New Haven, Conn.

Scoring Item Number	Deficiency	Qualifying Range of Score: Penalty Points [1]	Quality Grade of Sample Area: A and B Combined	C	D and E Combined
			Per cent of Dwelling Units Incurring Penalty Scores within the Qualifying Range (preceding column)		
FACILITIES	I. DWELLINGS				
2	Public Hall Daylight: Grossly Inadequate [2, 3]	5–10	0	0	10
3	Daylight Obstruction by Adjacent Structures: Serious [2]	5–15	18	28	44
8	Piped Water: Cold Only or None in Unit	7–15	4	20	42
9	Bathing Facilities: None, Shared, or No Hot Water	7–23	6	22	44
10	Toilet Facilities: Shared, Outside Unit, or Non-flush	10–40	2	1	9
12	Windowless Rooms: One or More	15–20	0	0	6
13	Installed Heating: None in at Least One-half of Rooms	10–18	7	60	64
15	Room Sizes: Area of One or More Rooms Substandard [2]	5–10	19	17	37
MAINTENANCE					
16	Yard Condition: Grossly Insanitary [2]	10–15	0	15	26
18	Structural Deterioration: Extreme [2]	20–30	3	15	37
OCCUPANCY					
21	Persons per Room: One and One-half or More	10–25	10	18	22
22	Area per Person: Substandard [2]	10–25	1	4	13
	II. NEIGHBORHOOD ENVIRONMENT		Per cent of Blocks or Street Frontages Incurring Penalty Scores within the Qualifying Range		
E 1	Land Coverage by Buildings: Excessive [2]	10–24	0	10	17
E 5	Land Use: 30 Per cent or More of Block Area in Industrial, Commercial or Mixed Residential Use	10–13	2	38	58
E 7	Specific Nuisances and Hazards from Non-residential Sources: High Incidence [2]	18–30	6	21	44
E 8	Moral Hazards: Considerable in the Area [2]	6–10	0	15	24
E 10	Hazards and Nuisances from Adjacent Streets: Considerable [2]	15–20	2	26	25
E 21	Public Playgrounds: Beyond Reasonable Distance [2]	8	4	44	69

1. For most of the deficiencies the range of possible scores begins with 1 or 2 penalty points. In order to show here only the really significant defects, those dwellings or street frontages with slight penalties for any item have been excluded.
2. Space limitations preclude an accurate statement here of the criteria on which this item is scored. As noted in the text, all deficiencies are reported in terms of objective characteristics, not in such loosely descriptive terms as are necessary here. Scoring is done from precise rating tables.
3. Applicable only to tenements with public halls.

high concentration of industrial or commercial uses (item E5), typical of downtown slum districts. This problem is emphasized by the almost equally high percentage showing severe degrees of specific nuisances (E7) such as noise, vibration, conflagration hazard, odor, and smoke associated with non-residential uses. Public playgrounds within normal walking distance (E22) are lacking for over two-thirds of the blocks in grades D and E. Crowding of the land by buildings (E1) is not so serious here as will be found in many slums,

but the prevalence of street hazards (E10) is the earmark of a district so cut up by traffic arteries as to be unsuitable for housing without replanning the traffic pattern.

Figures 3 and 4 give the characteristics of a typical dwelling in a grade E area. In Figure 4 is used the rating form prepared in the office for each dwelling unit, which shows the specific judgments for individual dwellings made possible by the technic, in addition to general evaluation of areas. The dwelling whose photograph and score are given here is the median case for Area 1.1, and is thus both better than half and worse than half of the others in this group of blocks. This dwelling unit is on the second floor rear of the building pictured. The three basic deficiencies of this unit and its structure are: lack of exterior or incombustible means of egress available to all dwelling units; disrepair of floors and plaster amounting to a definite safety hazard; and a family size which, in relation to both the number and substandard size of the rooms, causes excessive crowding. Additional defects include serious obstruction of daylight by neighboring structures, a bath tub rendered largely meaningless by lack of piped hot water, and stove heating for only two of the five rooms. It is clear that slum conditions are not restricted to the shared toilet, overcrowding, and the lack of repair which provided the grist for the hopper of old-line housing literature.

In these D and E grade areas, then, we have a sketch portrait of thoroughgoing slums, many of which should be cleared out as soon as possible, and which meanwhile call for correction orders and systematic reinspection. Even archaic law is clearly violated by many of the conditions brought to light. At least the eight blocks comprising the grade E areas of the present study are definite candidates for demolition, since they show considerably higher

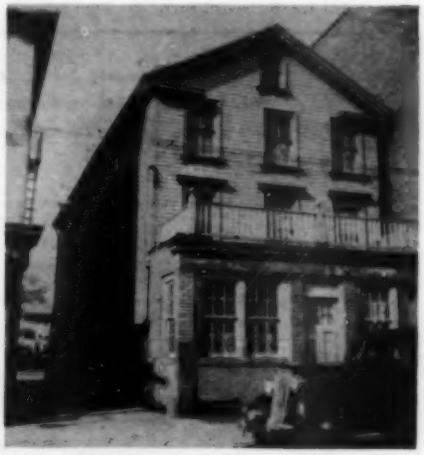


FIGURE 3—Typical Dwelling of a Grade E Area

penalty scores and a wider spread of basic deficiencies than a block in another part of the city which was cleared and rebuilt by the local housing authority because of the impossibility of rehabilitating it.

But what is the extent of these slums in the Southwest District as a whole? What proportion of the families live, for instance, under the conditions implied by grades D and E? How large are the areas which appear ripe for slum clearance? Where is drastic housing enforcement indicated? Where are the mild problem areas in which blight can perhaps be stopped and rehabilitation encouraged? The accompanying map (Figure 5) makes it possible to begin answering questions of this type, and these answers can be refined as necessary by further analysis of the appraisal data.

This map classifies all blocks in the Southwest District by quality grade of dwelling conditions as discussed above, with grades D-E and A-B combined for the sake of simplicity. The blocks of the sample areas are shown in heavy outline. For these the quality grades are definitive findings of the coöperative survey. The remaining areas have been

FIGURE 4

Coöperative Housing Survey of Southwest District, New Haven
Dwelling Unit Rating Form and Summary of Field Schedule
Appraisal Technic of the Committee on the Hygiene of Housing, A.P.H.A.

Area *1.1* Address *XX York St.*
Block *3* Unit Serial Number *452*

I. DESCRIPTION

Struc. Type *6 Fam.* W. Bus. *No* No. Stories *3*
Occupancy *Tenant* White *X* Non-White .....
No. Rms. in Unit *5* Monthly Rent Class *$20–25*
No. Pers. in Hsehld. *7* Yrly. Income *$1500–2000*

II. PENALTY SCORES AND BASIC DEFICIENCIES

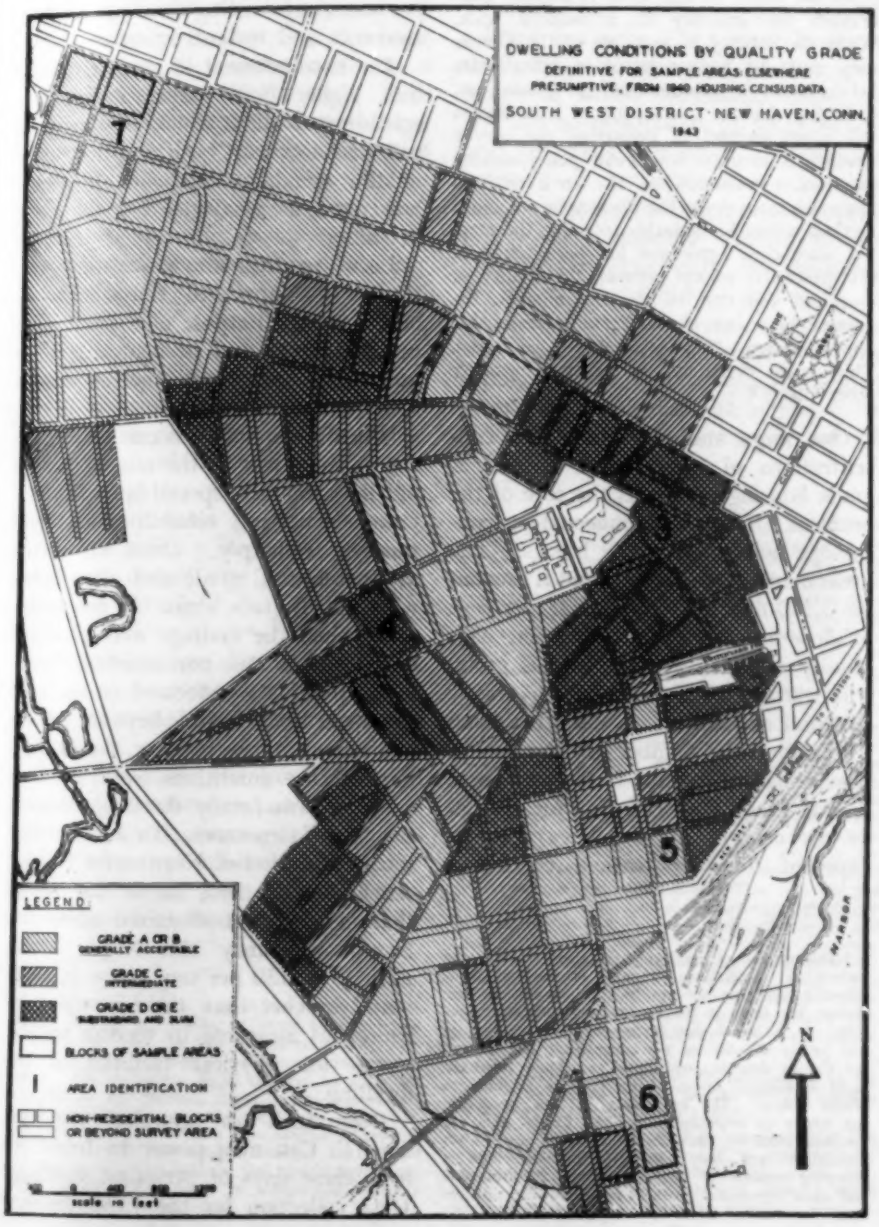
TYPE OF DEFICIENCY	PENALTY SCORE: POINTS			BASIC DEFIC.
	POSS. RANGE	THIS D. U.		
A. FACILITIES				
Structure				
1. Means of Egress	2–30	*14*		√
2. Public Hall Daylight	2–10	--		
3. Building Frontage	2, 3	--		
4. Sewage Disposal	4–30	--		--
5. Daylight Obstruction	2–15	*8*		
Dwelling Unit				
6. Unit Location	3, 7	--		
7. Artificial Lighting	10, 15	--		--
8. Piped Water	7–15	*7*		--
9. Bathing Facilities	3–23	*10*		--
10. Toilet Facilities	4–40	--		--
11. Kitchen-Laundering Facilities	2–15	*3*		--
12. Windowless Rooms	15, 20	--		--
13. Installed Heating	2–18	*11*		--
14. Closets	2–10	*2*		
15. Room Sizes	2–10	*5*		
Subtotal a: Facilities			*60*	
B. MAINTENANCE				
Structure				
16. Sanitation of Premises	1–15	--		
17. Landlord Services	2–12	*5*		
18. Structural Deterioration	1–30	*10*		--
Dwelling Unit				
19. Toilet Condition	10	--		
20. Structural Deterioration	2–30	*20*		√
Subtotal b: Maintenance			*35*	
C. OCCUPANCY: D.U.				
21. Room Crowding	2–25	*8*		√
22. Area Crowding	2–25	*13*		--
23. Family Doubling	7, 10	--		
Subtotal c: Occupancy			*21*	
TOTAL			*116*	*3*

24. Other Defic. Reported by Occupant. Not Scored. [X]

provisionally classified by scoring the 1940 Housing Census data for these blocks, using a rating scheme based on that of the committee's technic.

Under this scheme, the Census data for blocks of the sample areas were first compared with the survey findings; penalty scores were then assigned for the three most diagnostic items of the Census to give a

FIGURE 5



basis for computing presumptive quality grades. When the scoring formula had been refined so as to produce substantial agreement between the grading obtained from the Census data and the grading of the complete appraisal method, classification by presumptive quality grades was extended to the remaining blocks of the district. The map gives the result of this process, slightly generalized for legibility at a reduced scale. While the validity of such use of the Census data must be further tested in other cities before it can be recommended for general use, it is clear that for this section of New Haven this rapid method of projecting the survey findings is accurate for broad policy-making purposes. Projection of the environmental appraisal throughout the district by an index method would be desirable to refine the map, but since close agreement has been found in this particular section between the quality of dwellings and that of the environment, the present map can be taken as a reasonable approximation of the combined appraisal. This would definitely not be true in many other places.*

One large and several smaller concentrations of presumptive D and E grade housing appear as the core of the problem. These are connected by continuous belts of C grade blocks. The areas mapped as grades D and E account for 3,200 dwelling units, or 25 per cent of those in the Southwest District. Obviously not all dwellings in this group will warrant clearance or even drastic remedial action, but on the other hand a considerable number of the blocks provisionally classified from the Census data as grade C (accounting for another 28 per cent of the dwellings) can be expected to show marked concentrations of grade D or E conditions when further analyzed. Therefore 3,000 families seems reasonable as a preliminary figure for the number of families in the district needing correction of their housing conditions by official action, whether this be mandatory improvement of existing dwellings or slum clearance and reconstruction.

The encroachment of grade C blocks into higher grade areas indicates a spreading of blight which local agencies will wish to check, both as a protection to the remaining unspoiled neighborhoods and as a safeguard to the city's tax base.

Local agencies are now planning to extend the appraisal throughout the city, with the purpose of delimiting all problem areas and of analyzing these areas as necessary with the committee's full appraisal technic.

When the appraisal is carried through successive stages in the normal process of the technic, special problems of enforcement and rehabilitation reveal themselves sharply. These will extend at least into C grade and often somewhat into B grade areas. In one survey area, when the findings were classified by tenement and non-tenement buildings, attention was focused on the need to extend legal controls beyond the old-line tenement law in force, for in some respects the conditions were worse in one- and two-family dwellings than in the larger structures. In another case the special need of Negroes for housing relief was clarified, for it was shown that in a district of mixed white and Negro occupancy the Negro houses were 35 to 150 per cent worse in every rental bracket than those occupied by whites, as measured by median penalty scores for physical facilities of the dwelling.

Does such an appraisal cost too much? Can man power be found for it in these days of personnel shortage? Data collection for the 1,280 dwelling

* This method of employing the Census findings to project a qualitative judgment throughout considerable areas has not yet been tested outside New Haven, but there it has shown very satisfactory results. It is hoped that further tests in other cities will justify the use of the committee's technic and the Census data in combination to obtain relatively rapid evaluations of an entire city as a guide to official policy. The importance of this possibility can hardly be overstressed, for the Census data are available block by block for all cities of over 50,000 population, and they offer, if translated into a screening measure of housing quality, an invaluable and most economical method for delimiting problem areas for further intensive study.

units in the Southwest District study was done with 4 man-months of inspectors' time. Office processing and primary analysis of the dwelling data required between 3 and 4 months' time of one clerk.*

This moderate amount of work is making it possible for the city authorities to arrive for the first time at a basic understanding of housing needs in a substantial portion of the city. It is worth remarking that had not the 4 man-months of field work been assigned to this productive purpose, they might well have been spent on relatively aimless investigation of nuisance complaints to the health department. A sanitary engineer in the group which viewed the first findings of this study exclaimed, "I would be glad to see my inspectors drop all work based on nuisance complaints for two years if necessary, to get this kind of rock-bottom information. On the basis of such material we can begin to plan for some kind of lasting remedy. We could go on for twenty years with ordinary inspection methods, and at the end of that time be exactly where we started." †

IMPLICATIONS FOR OFFICIAL HOUSING POLICY ‡

The committee believes that the use of such an appraisal technic on any considerable scale will have effects of the first importance for public policy in housing and city planning. We believe, furthermore, that public health departments have a striking opportunity to promote among other city agencies the idea of jointly measuring and interpreting the local housing problem, for purposes such as those discussed.**

Only by appraisals of some such type can neighborhoods be classified as to their fitness for continued housing use or their need for clearance and reconstruction. As another of our subcommittees has said, "We must begin to think of comprehensive housing programs in which systematic inspection and official designation of substandardness by areas will serve to guide the agencies of reconstruction into slum areas where improvement under the police power is hopeless, but which may offer prime opportunity for rehousing or other rehabilitation projects. In other words, the vigorous and imaginative exercise of regulative powers may supply for the first time a method of earmarking whole districts, helping to indicate both the relative urgency and the

* These figures exclude time of the committee staff, divided between supervision of other personnel and developmental work on the procedures. They exclude also time required for the environmental appraisal. No comparable figure can yet be given for this part of the technic, since it was carried out complete for the first time in the Southwest District, being conducted in part with experimental procedures. The experience of the study, however, has pointed the way to simplifications in the environmental appraisal which should result in comparable economy with this part of the technic.

† Throughout the development of the technic, the committee has stressed the need for simplicity in methods of gathering and analyzing the data, both in order to insure that routine personnel could be used (with a reasonable amount of skilled direction) and in order to minimize the amount of tabulation and analysis required to yield significant findings. The scoring system, for example, since it provides an index or summary expression of over-all housing quality, eliminates the need for certain refined tabulations and analyses ordinarily required with other technics. Scoring the schedules, which might be thought a cumbersome procedure, has been reduced to a rapid and purely mechanical office routine by designing the field schedules in relation to this scoring process. Finally, it may be pointed out that while very large-scale appraisals with this technic might well make use of machine punch-cards and electric card-sorting equipment for tabulations, we have designed our procedures around the simpler manual system of marginal punch-cards. This type of card is processed by a method of needle-sorting which can be quickly learned by any intelligent clerk; and there is almost no expense for equipment. In using these cards we have developed simple and extremely rapid methods of analysis by percentage scales. Use of these scales eliminates the need for manual counting of the sorted cards—which need has usually been regarded as the basic limitation of the marginal punch-card system.

‡ For a fuller discussion of the applications of the technic see section IV of *Public Health Reports, Reprint No. 2359*, previously cited.[3]

** A manual of the complete procedures for this appraisal technic is being prepared, in order to make the method available for general use. The committee welcomes inquiries from local agencies which might be interested in using the technic.

types of constructive programs needed for improvement or rebuilding."[3]

Specifically, this type of appraisal will help in directing enforcement toward the kinds of control most needed in a given area or for different types of housing. It can supply part of the basis for redrafting obsolete ordinances or statutes to meet the urgent housing problem of the community. It can be used during the war to disclose marginal dwelling structures with unused capacity and worthy of reconditioning to meet the emergency demand. Its findings should be of major value, when appropriately presented to the general public, in rallying popular support for needed housing appropriations or legislation.

Finally, and perhaps most important, surveys of this type, conducted routinely in problem areas by the regular personnel of collaborating city departments, will supply answers to many of the policy and technical questions involved in housing and rehabilitation schemes for the post-war period. If a large and well planned housing program is to be an actuality in our democratic peace, there is much groundwork to be laid at once.

REFERENCES

1. Cookingham, L. P. Consolidation of Inspectional Services. *Public Management*, Sept., 1942, pp. 264–67.

2. The committee's method is more fully described in An Appraisal Technique for Urban Problem Areas as a Basis for Housing Policy of Local Governments. *Public Health Reports*, February 27 and April 3, 1942. Available as *Reprint No. 2359* on request to the Committee on the Hygiene of Housing, 310 Cedar Street, New Haven, Conn.

3. Subcommittee on Housing Regulation, The Improvement of Local Housing Regulation Under the Law. *A.J.P.H.*, Nov., 1942.

Committee on the Hygiene of Housing, 1943

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Erstwhile Credit Lines

FOR THOSE WHO HAVE JUST TUNED IN

IF the extra word in the title is puzzling, we refer you to page 604 of the May *Journal* for the explanation.

NEWSPAPER SUPPORT, SOUTHERN STYLE

On April 14, the health officers of 33 cities and counties in 18 states were notified by wire that their communities had won awards in the 1942 National Health Honor Roll, annual contest in community health promotion and protection sponsored by the Association and the U. S. Chamber of Commerce. Washington County, Miss., was one so honored. Dr. J. P. Ward is the Director of the Health Department.

On April 30, the Greenville, Miss., *Delta Democrat-Times*, a daily with a circulation of 6,000, nearly all in Washington County, issued a 12 page tabloid supplement devoted entirely to health. Banner headlines announced the winning of the coveted award; a three column cut of the Health Department personnel adorned page one; the history of the department was detailed, and the story of the National Health Honor Roll told with completeness and accuracy. Local advertisers used full and half page space, in many instances, to congratulate Dr. Ward and his staff. Pictures of various health department activities were featured and each received mention and credit in an individual headlined story. One article candidly emphasized in a 20′ caption that the "TB Program Is County's Weakest."

If the citizens of Washington County do not know now what they pay some of their taxes for, and are not satisfied that they are making a good investment, it is not the fault of the *Delta Democrat-Times* nor of Dr. Ward and his colleagues.

COÖPERATIVE SYPHILIS STUDY IN CLEVELAND

The Joint Social Hygiene Committee of the Academy of Medicine in Cleveland and the Cleveland Health Council has published an informative study of the cases of syphilis under treatment in Cuyahoga County, Ohio, in March, 1942, comparable to studies made each March since 1938. Through the coöperation of 1,516 practising physicians and the directors of hospital out-patient departments, hospitals, and institutions, it was found that cases of syphilis under treatment by private physicians and in hospital out-patient departments, hospitals, and institutions, after decreasing each March from 1938 to 1941, increased in the year ending March, 1942. Infectious cases of syphilis increased from 537 in March, 1941, to 641 in March, 1942.

Dr. James A. Doull, Chairman of the Joint Social Hygiene Committee, points out that a rise in the number of patients treated does not necessarily mean higher incidence of the disease but may be indicative only of greater activity in case finding.

The report is a first rate example of a pattern for problem solving at the level of the local community, where resources are mobilized for a well planned effort against an important menace.

SOURCE MATERIAL FOR TEACHING HYGIENE

Those who attended a session of the

Laboratory Section of the A.P.H.A. at the St. Louis Annual Meeting in October, 1942, will recall a scholarly paper by Colonel Edgar Erskine Hume, M.C., U. S. Army, on the Contributions of the Medical Corps of the Army to the Public Health Laboratory. This manuscript has been published in *Science* for April 2, pages 293–300, and should be useful to those who seek fresh sources of material keyed to the present-day emphasis on military medicine for teaching purposes.

WELCOME TO VOL. 1, NO. 1, ESTADISTICA

The first issue of *Estadistica*, Journal of the Inter American Statistical Institute, has just come through. Halbert L. Dunn, Director of the Census, is Secretary General of the Institute, and Juan De D. Bojorquez is Director and Editor-in-Chief of the Journal. The purpose of the official Journal of the Institute is stated to be that of the Institute itself "to advance statistical science and administration in the nations of the Western Hemisphere and to further the practical use of statistics in the solution of social and economic problems which are common to these nations."

The magazine is published in Mexico City and will be issued quarterly. The first number is dated March, 1943. It is printed in clear, open-faced type, is pleasant to look at and to handle. The twenty-odd major and short articles occupy 191 pages. At least half are in English with summaries in French, Spanish, and Portuguese. The others are summarized in English. The lead article, which describes the structure and program of the Inter American Statistical Institute, appears in full in Portuguese, English, and Spanish, with a summary in French.

There is no emphasis on vital statistics in this issue, beyond a discussion of the 5th Census of Brazil, indicating by inference some of the problems facing the public health worker in that country, but the Conference has a Committee on Demographic Statistics to which a number of projects have been assigned and upon which reports may later be expected. The projects have to do with the addition of an alphabetical index, in Spanish and Portuguese, to the *International List of Causes of Death;* the development of standards for collecting and compiling vital statistics and the establishment of a model center as part of a vital statistics system; establishment of a uniform system for the maintenance of current health statistics and hospital statistics and the cultural classification of Indians in the population census.

The subscription price of *Estadistica* is *$2.00* per year and subscriptions may be placed with Dr. Halbert L. Dunn, Inter American Statistical Institute, Bureau of the Census, Washington, D. C.

VISITORS FROM ABROAD

Every now and then, and more frequently this year than last, one of the staff comments, "There must be a lot of boats in. See these letters and magazines from England, from Russia and from Switzerland."

These safe arrivals, after long and hazardous journeyings, are heartening in many ways. They tell us mutely that progress is being made in the war against the U-boat. They assure us that the lamps have not gone out all over Europe. They give testimony to the courage and fortitude of public health workers overseas, who, under the most difficult circumstances, work, write, and see things through the press.

The English medical and health journals are no longer months late. That they could be published at all remains a miracle.

The League of Red Cross Societies continues to distribute mimeographed material from its office in Geneva.

Publication No. 5, 1942 series, recently received, contains articles on "The Nurse in Industry," "Mental Hygiene," and one on the vitamin C content of Swedish briar rose hips. The cultivation of briar rose hips may have significance for the United States, if, as is claimed, they are superior to oranges as a source of vitamin C and, further, that they may be brewed to provide a "most excellent beverage, far healthier than either coffee or tea."

The U.S.S.R. Society for Cultural Relations with Foreign Countries has been responsible for the appearance in this country of many interesting documents. Late arrivals include copies of general magazines, pamphlets on various aspects of Russian life, and an impressive volume on Pushkin—all published in Moscow and in English. If you have a periodical to exchange for publications of the Society, it would be worth while to suggest the arrangement. The address is: B. Gruzinskaya 17, Moscow 56, U.S.S.R.

THE HIGH SCHOOL VICTORY CORPS

High School Victory Corps are being established in many schools throughout the country. Coöperative efforts of the U. S. Office of Education, the Army, and the Navy have launched this national effort to secure the active participation of high school youth in the community's war work, and to train youth for war services which are ahead when school days are over.

Building and maintaining physical fitness is an important part of the program. Two manuals prepared by the Office of Education in coöperation with the Army, the Navy, the U. S. Public Health Service, the Office of Defense Health and Welfare (now called the Office of Community War Services), and other agencies offer detailed suggestions to schools in developing physical fitness programs. They are entitled *Physical Fitness through Physical Education for the Victory Corps* and *Physical Fitness through Health Education for the Victory Corps.*

In reprinting the advance digest of the second manual in *Health Briefs*, Tennessee Department of Public Health monthly, the Editor, Dr. Robert H. White, remarks in a footnote:

> Although this article is worded for high schools organized in the Victory Corps program, the potential application is much wider. The proposed health measures include the same fundamentals that every school should be giving balanced emphasis to, regardless of secondary or elementary level, whether inside or outside of the "Victory Corps" framework.

A FOOTNOTE TO THE PHYSICAL FITNESS PROGRAM

Dr. Carl A. Wilzbach, Health Commissioner of Cincinnati, under whose direction school health services are conducted, writes of recent experiences in his city. We quote:

> When the physical fitness program was started we had a meeting with the Superintendent of Schools, and decided that there would be no physical fitness efforts made until we had again examined senior high school boys and girls to be sure that they could undergo vigorous training.
>
> The examinations have been completed in the public schools and we are at the present time taking the parochial schools. Some 2,000 boys and girls were examined in the public schools, and I want to mention only a few things which we found. We set up a scheme to take care of the physical defects which we found in advance. These included the private physicians, and dentists, the community facilities including the public health clinics and out-patient dispensaries. We found that 1,552 had defective teeth, 335 weak and flat feet, 153 with vision defects, 100 with hearing losses, 131 with heart and cardiovascular system abnormalities. Public health nurses are now following all of these children discovered to see that their physical defects are cared for. We were surprised to find how many could go to private physicians and this, of course, made the clinic and public health load much less.
>
> I think there is no doubt of the importance of this effort because these boys will soon be called before selective service boards and

the girls will either be in some branch of the armed forces or in industry.

ADVENTURES OF A MEDICAL OFFICER IN THE PARACHUTE INFANTRY

Captain John Y. Battenfield, Surgeon, Army Medical Corps, illuminates one aspect of army medical life in some recent letters. Dr. Battenfield, before he was commissioned, was connected with the National Society for the Prevention of Blindness, New York. He received the M.P.H. degree from Johns Hopkins in 1942.

Here are excerpts from two letters written six weeks apart:

"You may be interested to know that I went from Sheppard Field to the Medical Field Service School at Carlisle Barracks and from there to the Parachute School at Fort Benning where I qualified as a parachutist on December 5 and very shortly thereafter was ordered to foreign service. At present I am a Surgeon in the Parachute Infantry and am enjoying my work very much. All our medical enlisted men and the medical officers jump with the troops both in training and in combat.

"We have had several very interesting jumps since we have been here. On one we got about 200 men into the jungles, including ourselves, due to an erroneous weather report on wind velocity. I was the second officer on the ground, or rather in the trees, and it certainly was quite exciting to watch the remainder of the 200 land in the trees. Not a man was seriously injured.

"My Commanding Officer has requested that I prepare a pamphlet for the men on jungle health. In order to understand the problems concerned better than I could by consulting the literature only, I took 15 men, including myself and another officer, to act as guide for an 8 day jungle hike. Believe me, it was certainly educational. I have never seen so much rain and mud. We walked up and down mountains of rocks and mud, waded rivers, slept in wet, cold hammocks, were bitten by mosquitoes, chiggers, ticks, ants, and buffalo gnats. We ate jungle rations which are excellent, and C rations which are very heavy to carry and very unpalatable. We were resupplied by transport plane and parachute packages. We had only two cases of dysentery during the trip. Our water was of course chlorinated. Practically the entire contents of first aid kits were thrown away after the second day because of the weight, as well as everything else not absolutely essential. All in all it was very interesting but not something one wishes to repeat very often."

"Since my last letter we have been extremely busy and have had a number of unusual problems. Your letter has remained unanswered so long because shortly after its arrival we had a night jump with the task of capturing one of the large airports here (just a training problem) and I was number 21 man and last in my stick of jumpers. By the time I made my exit from the door of the plane we had overshot the jump field and I made a very hard landing against a steep hill about 200 feet high. The night was so black it looked perfectly level and I did not expect such a terrific jar. The result was that I fractured my right foot and suffered a mild cerebral concussion. The joke of the situation was that I had the Surgeon of this area as a guest inspecting our evacuation facilities under difficult circumstances and I was the first casualty. We lost 10 per cent of our command as jump casualties because of the darkness and a high wind, but captured the airport completely."

DESK BLOTTERS PROMOTE HEALTH EDUCATION OF DOCTORS

The Bureau of Social Hygiene of the New York City Department of Health, of which Dr. Theodore Rosenthal is Director, has recently distributed an informative blotter to doctors which carries the following information.

Sulfathiazole is the accepted drug for the treatment of gonococcal infections.

Sulfathiazole may be administered on either a 5-day or a 10-day plan. The 5-day plan is preferred, provided there are no indications for the longer course. The total amount of the drug is prescribed at the first visit, but the patient should be seen every 48 hours.

FIVE-DAY PLAN: Administer 1 gram (15 grains) of sulfathiazole 4 times daily, after each meal and at bedtime, for 5 days (total dosage 20 grams).

TEN-DAY PLAN: Administer ½ gram (7½ grains) of sulfathiazole 4 times daily, after each meal and at bedtime for 10 days (total dosage 20 grams). No local treatment of any type is necessary.

If the patient is not cured with the first course of treatment, stop sulfathiazole for

one week and then repeat the course of sulfathiazole as before. In the interim, local therapy with mild antiseptics should be given.

In women, acute gonococcal salpingitis requires treatment in bed. Two grams of sulfathiazole per day as prescribed in a suggested form of oral treatment. Fever, pain and tenderness almost or entirely disappear in from 48 to 96 hours in most cases. Pelvic or Bartholin gland abscesses must always be treated surgically.

Consultation is desirable in the presence of complications or failure to react promptly and favorably. Routine serologic examination for syphilis on all patients is recommended.

SPRING TONIC (PRINTED)

As cheerful as a dandelion and with the same high visability among a host of less imaginative materials on the subject is a nutrition leaflet entitled "For Health" for which the Mississippi State Board of Health, Felix J. Underwood, M.D., Executive Officer, is responsible. Dandelion-yellow, garlanded with fruit jars and vegetables, and with casual hand-lettered vegetable-stand signs on its front cover, it makes one hungry for a tomato and lettuce sandwich and a glass of fruit juice. What more than that can a leaflet on fruits and vegetables do?

REPORT OF THE NRPB

The alacrity with which the Report of the National Resources Planning Board was dropped from the newspapers has been equalled only by the short shrift given two years ago by the press generally to the findings of the Temporary National Economic Committee. That the newspapers of the country failed to follow through with the implications to the public for a happier, more secure post-war world, set in perspective by the recommendations of the NRPB, is obvious by the results of a recent Gallup poll. Indeed, it is obvious that the original and, in most instances, the only notice taken by the nation's press of this significant study was totally inadequate. The Gallup poll indicated that the public is uninformed and therefore unimpressed. Seventy-five per cent of the persons queried knew nothing about the report. Thomas Jefferson said if he had to choose between good government and good newspapers, he would select the latter. Where are the good newspapers of the country on the issue of social security?

New York's daily, *PM*, has done the exceptional job with the report of the NRPB. It has not only followed through, but it has skillfully related many of the individual recommendations to a present Army sergeant and his family, translating the technical language to the language of the man in the street, in this case, an ex-railway employee, who expects to return to his $30 a week position when the war is over. There is no generalization; instead, each recommendation is projected into the man's life in terms of him, his wife, his child, and his pocketbook. This is finding him where he lives. This is interpretation of a high order, recommended to public health workers as a technic.

RELATIVE CONTRIBUTIONS OF PROTEIN RICH FOODS

A new and vivid method of visualizing the contributions to the dietary of protein rich foods has been published by the Division of Maternal and Child Health of the Oregon State Department of Health, of which Mrs. Laura P. Wells is consultant in nutrition. Using circles to represent the daily requirement of a specific nutrient, the contribution of a given portion of various protein rich foods is indicated graphically in such a form that it could be used in the average family kitchen. The chart is colorful and commendable in that it does not complicate the picture by an exhaustive treatment.

The chart was compiled by Dr. Margaret L. Fincke, Associate Professor of

Foods and Nutrition in the Oregon State College, and has been published jointly by the State Board of Health and the Oregon Nutrition Council. The charts are obtainable in quantity lots at a cost of *$1.25 per 100*.

THE HOUSING AUTHORITY AND THE HEALTH DEPARTMENT

The relation of the health officer to the slum clearance and low rent housing movement is not as close here as it is in England; yet nevertheless even in this country there are numerous and important points of contact. A survey of a group of recent housing authority reports prepared for the *Journal* by C.-E. A. Winslow, Dr.P.H., Professor of Public Health at Yale University, brings out some of these relationships.

The importance of housing to the health department is indicated by statistics in the report of the Boston Housing Authority, showing that on the slum sites replaced by eight projects of the Housing Authority, 21 per cent of the original dwellings had no water-closet within the dwelling unit, 62 per cent had no tub or shower, 47 per cent had no supply of hot water, and 93 per cent had no central heating. It is clearly desirable that the health officer should have a clear idea of the distribution of such substandard housing in his area. Memphis, Tenn., has played a pioneer rôle in obtaining such information, partly, no doubt, because Dr. L. M. Graves, City Health Officer, is also a member of the Housing Authority; this Authority in its last annual report refers to a study of the whole area within a five mile county radius, revealing the fact that 62 per cent of the dwellings in that area are substandard. Baltimore, Md., is another city which has made notable contributions in this field, and Dr. Huntington Williams's last report as health officer notes the approval of two new ordinances giving the Commissioner of Health broad powers in dealing with unhygienic housing and the increase in housing inspection made possible by an increased field staff.

In many communities, voluntary associations coöperate with both the health officer and the Housing Authority. Thus the Pittsburgh Housing Association reports continuing intensive surveys of the city section by section which should prove invaluable in constructive planning. The Washington Housing Association has done an admirable piece of work in preparing a comprehensive housing code effectively coördinated with projected revisions of local building and health codes. It also reports on a comprehensive study of the rodent problem, which is leading to a city-wide campaign under a sanitary engineer employed by the Health Department.

Many housing authority reports refer to the development of clinics and health centers in the projects themselves—another type of coöperation of substantial significance. The Los Angeles Authority reports that "young America must be kept healthy—so the Los Angeles Health Department sees to it that youngsters are kept germ-free in its well-baby conferences, held at various locations throughout the city including public housing developments." The report of the New York City Housing Authority notes that "the Child Health Stations at East River Houses and Kingsborough Houses were designed with a new type of room arrangement to permit greater privacy to the patient, more quiet for the staff, and less congestion for all. The Authority enlisted the coöperation of the Department of Health in making these design changes. The combined study by the two agencies resulted in sound improvements apparent in the plan for the proposed Child Health Station for Amsterdam Houses."

The Pittsburgh Housing Association report says: "Much of the Associa-

tion's program is devoted to direct coöperation with other social agencies, such as the Public Health Nursing Association . . . The Public Health Nursing Association, always aware of problems of sanitation and safety in the home, reported 52 per cent of the housing complaints received in the last year." As to results achieved, the Peoria Housing Authority cites the following comments by tenants: "The first winter in several years I have been able to walk" (from an arthritic). "The steady heat and warmth have done my joints more good than all the doctors and their medicine" (from an elderly woman with rheumatism). "We have not had a single cold all winter." "All my three children had pneumonia last winter because the house was so old and cold; this winter they have not had a slight cold."

More authoritative to the readers of the *Journal* is the following comment by Dr. J. I. Linde, Health Officer of New Haven, in the Report of the New Haven Housing Authority. He says:

"Of all city officials, the health officer, by virtue of his official duties, is in the best position to sense the connection between housing and health. Historically, housing laws (tenement house acts), together with those concerned with the control of contagion and the laws of hygiene, have formed the basis of the Sanitary Code.

"The three low rent government housing projects have been quick to demonstrate the positive effects upon healthful living which good housing offers.

"Demolition of entire blocks of slums has eliminated housing complaints from these areas to the Health Department, so that the health inspector's functions in such areas are reduced to that of health educator. No overcrowding, sanitary plumbing, adequate heat, light, ventilation, numerous safety features—all of these have exerted a direct influence upon the physical side of the occupants' lives by serving to keep the incidence of disease and accidents to a minimum.

"Provision of adequate play space for children, nursery care of children of working mothers, recreational facilities and educational programs for adults, construction of homes to suit occupants' needs and comfort, and planning throughout the homes for the healthful living of the occupants—these have contributed immeasurably to the psychological factors in health which make for balanced mental hygiene for the individual and sound family and community life of groups.

"Finally, establishment of health centers in the housing projects to carry on health programs (such as dental care, prenatal instruction and care, infant hygiene, health education classes, etc.), is bringing necessary health services closer to the citizens of New Haven.

"Thus, the housing project is becoming the generator of healthful living, immediately influencing the lives of its residents as well as those in the surrounding areas."

In his participation in the housing movement, the health officer can obtain substantial aid from our Committee on the Hygiene of Housing. This committee has recently prepared an appraisal procedure for the measurement of the quality of individual dwellings and environmental areas which is far superior to any hitherto available and yet so simple that it can be applied by the average health department inspector. The committee is also making studies of the principles underlying the legal control of housing, particularly through the application of sanitary codes, which should prove of substantial value.*

* Information in regard to the work of the committee may be obtained from its headquarters, 310 Cedar Street, New Haven, Conn.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

Osler's Principles and Practice of Medicine—*Originally Written by Sir William Osler. Designed for the Use of Practitioners and Students of Medicine—By Henry A. Christian. (14 ed.) New York: Appleton-Century,* 1942. 1,500 pp. Price, $9.50.

For the past fifty years Osler's *Principles and Practice of Medicine* has been one of the outstanding medical textbooks in the English language. The 14th edition revised by Dr. Henry A. Christian maintains the tradition of Osler's original volume in that it is written entirely by a single author. The comprehensive manner in which disease is treated in this newest volume is a tribute to Dr. Christian's breadth of interest and experience in internal medicine.

The question may be debated as to whether a single individual is justified in undertaking the tremendous task of revising or writing a textbook of medicine in this age of rapid advance in medical knowledge. Vast as the subject of medicine was in 1892, its essence was contained in Osler's original volume, which he compiled almost single handed. Medicine then, however, was largely a descriptive science. Much was known about the clinical manifestations of disease and its morbid anatomy, but of etiology, pathogenesis, and specific therapy there was but fragmentary knowledge. Today the author's task is far more difficult. The premedical sciences in particular have added a prodigious body of facts not known to the physician of the last century. No longer can all of medicine be mastered by a single mind. The day has come when a textbook of medicine cannot be sufficiently comprehensive unless compiled by a series of contributors, each of whom is qualified as an expert in a specific field of medical science. Although Osler's *Principles and Practice of Medicine* will continue to be widely used by American students of medicine, it is doubtful if it will remain among the leading textbooks in the English language if subsequent revisions are made by a single author.

W. Barry Wood

Fundamentals of Immunology—*By William C. Boyd, Ph.D. New York: Interscience Publishers, Inc.,* 1943. 446 pp. Price, $5.50.

The primary value of this book is its extensive modern discussion of antibody-antigen reactions and the considerations of the various theses involved. The author states that the point of view adopted has been, so far as possible, the point of view of the chemist, and it would appear that this is a very true statement of the approach. The book scarcely deals with specific problems of infection and for that reason has little of applied value to the clinician or the diagnostic laboratory worker. However, for the individual who is seeking a background of current investigation in terms of physical chemistry, there is much to be gained; in fact, the book is so weighted in this direction that many of the other sections seem to be included only for the sake of completeness in headings. It is quite clear that the author deliberately avoids discussion of mechanisms of infection and immunity except as serological reactions. The final chapter, dealing with laboratory

and clinical technic, would serve well in outlining a course to illustrate the various immunological procedures.

There has been need for a book attempting, in a descriptive manner, to make the basic reactions of immunology clear in terms of modern concepts without losing the student in a mass of symbols. This effect has been gained.

THOMAS FRANCIS, JR.

Orthopedic Conditions at Birth—Nursing Responsibilities—*By Jessie L. Stevenson, R.N. New York: Joint Orthopedic Nursing Advisory Service of the National Organization for Public Health Nursing and the National League of Nursing Education,* 1943. 80 pp.

Nurses as professional workers are becoming increasingly aware of the orthopedic content of everyday nursing care, and the need for the interpretation of orthopedics in terms applicable to the responsibilities of the nurse caring for the infant, supervising the health needs of the preschool or school age child, or providing nursing care for the individual confined to bed for a long period of time because of some infectious process. This handbook, *Orthopedic Conditions at Birth—Nursing Responsibilities,* will be welcomed by those nurses who are interested in the interpretation of orthopedic care as it relates to the care of the infant and young child.

A general review of anatomy, etiology, and pathology is presented for each of the several conditions discussed. Present trends in treatment are briefly reviewed. The discussion is directed toward the nursing responsibility for recognition of these conditions and prompt reporting of observations to medical authority in order that diagnosis may be made and early care instituted. Considerable emphasis is placed on the responsibility of the nurse in giving interpretation and support to the family during a prolonged treatment period, and in promoting desirable family and community attitudes toward conditions which cannot be totally corrected.

The material presented in this handbook, together with the references cited, constitute a means of rapid review for those familiar with these conditions and a means of developing a more extensive fund of information for those less familiar with the conditions cited. It should prove of particular value to both institutional and public health nurses engaged in any phase of child and maternal care.

FLORENCE PHENIX

A Surgeon's Fight to Rebuild Men *(An Autobiography)*—*By Fred H. Albee. New York: Dutton,* 1943. 349 pp. Price, $3.50.

The publisher characterizes the author as "the world's foremost Ambassador in White," even though the title indicates that the book concerns something so undiplomatic as a "Fight." But before one has progressed far beyond Part One it is obvious that the titles does fit the book, and after reading Chapter XXIV, which describes Dr. Albee's controversy with the New York County Medical Society, this reviewer was sure this theme had destroyed any possible effectiveness of the book.

Dr. Albee describes his bone graft surgery simply and well, both in the body of the book and in the appendix. That he is a master in this field is universally acknowledged, but one wishes he had admitted a few mistakes instead of tacitly corroborating Lowell Thomas's statement in the foreword that he is "one of the great surgeons of all time." The apparent purpose of the introduction into the book of several testimonial letters from former patients is to support this thesis.

The book lacks continuity, even

though there is a disingenuous attempt to show that his career as a bone graft surgeon was largely determined by observing his grandfather graft apple trees. The style is jerky, due to the author's tendency frequently to go rather far afield. In thus doing, he makes numerous loose, inaccurate statements, such as that Richard Strong "abolished" typhus in Serbia, that army medical officers at Hoboken were "compelled to deflu embarking troops," that the author's research in U. S. General Hospital No. 3 at Colonia, N. J., was "probably the only animal research performed in any army hospital in this country during the First World War." The author's statements concerning his status and activities at General Hospital No. 3 include numerous inaccuracies as well as several figments of a fertile imagination—this on the authority of his commanding officer, Col. Upshur, to whom Dr. Albee gives no credit for organization or administration. Dr. Albee's statement that he himself organized the hospital is overdrawn, to say the least, for he had no authority or responsibility at that hospital beyond that of any chief of a surgical service.

Much space is devoted to the Carrel-Dakin treatment, leaving the reader with the impression that this is still the preferred treatment, while only seven lines are devoted to the Orr technic, which is one of several technics which have practically superseded the Carrel-Dakin method. EDWARD G. HUBER

Food Poisoning—*By G. M. Dack, Ph.D., M.D. Chicago: University of Chicago,* 1943. 138 pp. Price, $2.00.

A colleague of the late E. O. Jordan, student of F. W. Turner and an authority on food poisoning, Dr. Dack has had this book published at an opportune time. The individual concern about our food; the necessity for feeding large numbers of groups in war production plants, naval and military areas, and the exodus of food handling personnel to more lucrative employment justify its being read and studied and kept as a reference manual.

Besides the introductory chapter, botulism, the Staphylococci, the Salmonella, the little known alpha-type Streptococci, poisonous chemicals and poisonous plants and animals are covered. Botulism and the Staphylococci are included, rightfully, in one-half of the book. The interest in and encouragement of home canning and the many outbreaks due to the Staphylococci justify this.

Although not replete with references, it is refreshing to observe that 90 per cent of the references cited are from publications of the past twenty years rather than those of the era when "ptomain" was the only cause of food poisoning.

Preventive means are given for practically every known type of food poisoning. Tables for use by the statistician, bacteriologist, and investigator are given, as well as suggested forms for questionnaires that may be used by the public health worker.

This book should be in the hands of every dietitian, army and navy mess officer, health department food control and laboratory personnel, as well as in hospital and other institution libraries. It should be consulted frequently before and during any investigation of food poisoning outbreaks.

FERDINAND A. KORFF

Plumbing Practice and Design, *Volume 1*—*By Svend Plum. New York: Wiley,* 1943. 308 pp. Price, $4.50.

This book is an attempt to consolidate the scattered data on plumbing, to present these data in uniform terminology and in a manner usable for solving the many problems occurring in the design of plumbing systems. The

material is set forth and its use is left to the ingenuity of the reader, depending upon his knowledge of the underlying principles.

First there is a discussion of the types and causes of corrosion and how different materials react to corrosion. The remainder of the book in format resembles a set of specifications since recommended standards for all materials, piping, fittings, controls, accessories, pumps, etc., are included. Fire protection codes and regulations are included as well as a chapter on air piping and equipment.

The writer is to be commended in using only recognized accepted standards and specifications sanctioned by the federal government and the various technical societies, such as the American Society of Testing Materials, American Society of Mechanical Engineering, American Water Works Association, National Board of Fire Underwriters, New England Water Works Association, and for his frequent references to ASA Standards.

C. P. STRAUB

Intensive Rural Hygiene Work in the Netherlands East Indies—*By J. L. Hydrick, M.D. Introduction by Professor J. Snapper. New York: The Netherlands Information Bureau (10 Rockefeller Plaza), New York, N. Y. Bull. No. 7,* 1942. 83 pp.

Dr. Hydrick has presented, in this pamphlet, in an objective and practical manner, the development and functions of a general public health program in the Netherlands East Indies.

He found from his work in Java that success depended upon a complete separation, administratively, of the program in community hygiene from the medical care program. In the United States, the trend has been to coördinate all community-wide activities in the promotion of health. Some health administrators believe that the medical care program should be incorporated in the activities of health education.

Dr. Hydrick is convincing in his arguments that these two activities should be completely separated. He first discusses in some detail the principles of good public health education, and then shows in a realistic way the application of these principles to people in rural areas where superstition is common, and where approximately 65 per cent are illiterate.

The fundamental plan on which he developed his work is that any worth while and permanent public health program must of necessity win the active coöperation of the people. Furthermore, it must stimulate people to activity and to the practice of good habits of personal hygiene.

He found that the most successful means to accomplish this objective was through home visits and personal instruction. At the outset, trained nurses were used for this educational work, but they were found "to remain on a far too high level for the work." He then devised a plan in which hygiene teachers (*hygiene-mantris*) were used in home instruction in hygiene with considerable success. *Hygiene-mantris* are men who are carefully chosen on the basis of their personal qualifications. They are given an 18 months' course in hygiene before they are sent into the field. Their work is entirely educational. This plan succeeded where all other plans had failed.

He also found another individual to be valuable in village education: this was the trained midwife, who is sent into the villages to train the unskilled and untrained midwife (*doekoen-beranak*) in the elements of maternal and child health protection.

Dr. Hydrick emphasizes the fact that physicians were of little value to him in his health education work. He insists that medical personnel need special training before engaging in public

health, and believes that in the future the training of physicians in hygiene and protective medicine should be begun in the medical school. Plans were made for this training with the coöperation of the Public Health Service, in the Medical School at Batavia.

This pamphlet is a report of the Netherlands East Indies Health Service, first published in Dutch in 1937. The English translation may be obtained from the Netherlands Information Bureau, 10 Rockefeller Plaza, New York, N. Y. It is worthy of careful reading by all public health workers who are especially interested in rural health education. W. G. SMILLIE

Man in Structure and Function *(2 Volumes)—By Fritz Kahn, M.D. Translated from the German and edited by George Rosen, M.D. New York: Knopf,* 1943. 742 pp. Price, $10.00.

Fritz Kahn's work, *Man in Structure and Function,* is an extraordinary production. It is distinguished in two respects: its illustrations and its statistical or numerical versions of anatomical and physiological data. The first is by far the more noteworthy. Dr. Kahn has the rare gift of visualizing his data, and he reveals a superb skill in projecting his visions in the form of three-dimensional, dynamic drawings. He has also a keen aptness in literally drawing analogies, and these serve to make abstruse relationships and functions easy to grasp.

The work, consisting of 742 pages of text and 470 illustrations, systematically surveys the entire body both anatomically and physiologically. Interspersed in the text are numerous references to pathogenic agents and conditions, showing the mechanisms by which these produce disorders in the human body.

Man in Structure and Function should prove particularly useful to health educators, biology teachers, and nurses. But it is bound to be of interest to everyone who is concerned with the constitution and operations of the human organism. The translator, Dr. George Rosen, has rendered the text of the work, originally published in German, in clear and facile English. The publisher, too, deserves commendation for having produced a very handsome twin book.

There is, however, one observation that must be made concerning the text of the work and its illustrations. Both are at times too definitive and too categoric in substance and in implication. Those are the inevitable handicaps of simplification. Yet, without some simplification none but the expert could understand the human body in structure and function. With this minor reservation, Dr. Kahn's work can be welcomed as a valuable contribution to popular medical literature.

IAGO GALDSTON

The Infectious Diseases of Domestic Animals—*By William Arthur Hagan. Ithaca, N. Y.: Comstock Publishing Co., Inc.,* 1943. 665 pp. Price, $6.00.

The author's preface rightly describes this book which is an outgrowth of his lectures on "pathogenic bacteriology and immunology" at the New York State Veterinary College. It is not a textbook on bacteriology, as much of the material usual in such books has been omitted, it being taken for granted that the general principles of the subject have already been learned by the reader. On the other hand, it contains an unusual amount of material on the fungi, protozoa, and viruses pathogenic for domestic animals. The author states that it will be used by himself in his teaching and hopes it will be found useful to others giving similar courses.

The text is well and interestingly written. In describing the diseases due

to bacteria, enough of the cultural characteristics and methods of isolation of disease-producing organisms is given to make the subject clear. The discussion of diseases which are common to man and animals, or those which are transmitted from animals to man, is well done and sufficient.

The giving of proper credit for work is not as exact or complete as it should be. The reviewer believes in the historical method of teaching and is especially concerned in giving Americans credit for their work. For example, mallein was first made by the late Dr. Leonard Pearson though usually credited to Kalning, a Russian. In a book by a veterinarian and intended for veterinarians, this seems an unfortunate omission, especially in view of the tendency of European writers to ignore American work — a tendency which has been to a certain extent now overcome. The author perpetuates the error of giving 1898 as the date of Theobald Smith's differentiation between human and bovine tubercle bacilli. It is true this date is correct for one of Dr. Smith's papers, but the first on the subject appeared in 1896.

The illustrations are on the whole good and abundant enough. On page 37, the picture showing the bleeding of horses for the production of antitoxin is not in accord with general practice, and the legend misleading.

The book can be highly recommended as covering the ground outlined in the Preface. We wish that human physicians could be induced to read books of this sort. Even to those who have already done a fair amount of reading of veterinary medicine, the book is a revelation of the many infectious diseases to which domestic animals are subject. It is not out of place to repeat here the often given warning concerning the number of diseases which are transmissible from the lower animals to man, and the large part which veterinary bacteriology and veterinary medicine in general play in the health and welfare of the human race.

The text is well documented, the references being conveniently placed at the end of each chapter. The printing is good. An excellent Table of Contents and a good index add to the practical value of the text.

MAZYCK P. RAVENEL

Infant and Child in the Culture of Today—the Guidance of Development—*By Arnold Gesell, M.D., and Frances L. Ilg, M.D., with the collaboration of Janet Learned, M.A., and Louise B. Ames, Ph.D. New York: Harper*, 1943. 399 pp. Price, $4.00.

Arnold Gesell and his colleagues have produced another unique volume based upon their exhaustive studies in the Yale Clinic of Child Development. This time, however, the material is presented in such a manner as to be of considerable practical value to parents and child welfare workers alike. It is permeated with a philosophy which has a distinct value in orienting our present-day culture toward democratic ideals as opposed to a totalitarian type of culture. The chain of evidence runing through the entire volume is linked to the theme—"This volume conceives cultural guidance in terms of the optimal needs of the individual organism. The cultural pattern must be adapted to the growth pattern because in the final analysis all individual development depends upon intrinsic self-regulation. There is no adjustment to culture other than self-adjustment" (page 53).

Part One of this fascinating book deals with Growth and Culture and considers "The Family in a Democratic Culture" as well as "The Personality and Acculturation" of the child. "The Cycle of Child Development" concludes this section.

Part Two takes up systematically The Growing Child in successive stages of growth and development. It is divided in a way to be especially helpful to parents by outlining the behavior profile for each age period followed by the various functions carried out in a Behavior Day.

In Part Three the Guidance of Growth is presented in a series of chapters taking up in considerable detail sleep, feeding, bowel and bladder control, personal and sex interests, self-activity, sociality and self-containment.

The Appendix is designed to be practical and helpful for all those concerned with child care. It gives a Behavior Day Chart for Self-Regulation Scheduling; lists of toys, play material and equipment, books for preschool children, and musical records for infants and young children. A well chosen list of selected readings concludes this part. The illustrations and line drawings have been selected with care, and a comprehensive index is included.

This is a volume that can be read from cover to cover with rapt attention and with great profit. The publishers are to be commended for the excellent format and illustrations.

RICHARD A. BOLT

Manual of War-time Hygiene: A Supplement to a College Textbook of Hygiene—*By Dean Franklin Smiley, M.D., and Adrian Gordon Gould, M.D. New York: Macmillan,* 1942. 86 pp. Price, $1.00.

In a short booklet the authors, from the Department of Hygiene and Preventive Medicine at Cornell University, Ithaca, N. Y., aim to redirect and reorient the college student's work in the field of hygiene. This is because today the students are definitely preparing themselves for commissions in the armed forces or for equally important positions in civil life during the greatest of all wars. Personal hygiene, always important, takes on added significance for the collegian who on graduation may be assigned the responsibility for the health and well-being of groups of soldiers or other military personnel. The pamphlet seeks particularly to give the college man a summary of and reading references related to the matters of hygiene of import to an officer in military service.

The greater portion of the text deals briefly with elementary military hygiene, fitness for service, the prevention of specific diseases by vaccination or inoculation, camp sanitation, nutrition, the organization of military medical care, recreation, and the battle against the venereal diseases. There follows a short section on civilian defense with emphasis on the emergency medical services and the problems of chemical warfare. The third main segment of the booket is devoted to war-time first aid and this is followed by appendix material on artificial respiration. There is a good bibliography that should be relied upon heavily by any student who desires to take the matter of hygiene seriously in times of war.

The short hour or two needed for a thorough study of the pamphlet will well repay any college man. The pages devoted to the insect-borne diseases and the combat against the venereal diseases are among the best in the volume. Everyone should know the matter presented in regard to chemical warfare and first aid. If the authors have compiled their matter to a large degree from available authoritative documents, there can be no particular objection to this. However, while it is recognized that civilian medical service will be limited in war-time, it may be a bit severe to put the "must" in the expression, "The military forces must have 6 or 7 physicians for each 1,000 officers and men."

HUNTINGTON WILLIAMS

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Preventive Measures against Keratoconjunctivitis — This committee report sets forth the present-day understanding of the nature, the clinical course, the treatment, period of infectivity, and preventive measures against epidemic keratoconjunctivitis.

ANON. Epidemic Keratoconjunctivitis. J.A.M.A. 121, 14:1153 (Apr. 3), 1943.

Rural Sewage Disposal—Recommendations of a notable committee on rural sanitation will serve as a guide to satisfactory field practice concerned with sewage disposal methods. Working drawings for the construction of acceptable home disposal plants are included.

ANON. Recommendations of Joint Committee on Rural Sanitation-Rural Sewage Disposal. Pub. Health Rep. 58, 11:417 (Mar. 12), 1943.

They Still Need Help—Though the amount of money available for food does influence the quality of the meals, it was found in this survey that nearly half the families, which spent enough for the table, still had poor diets. Instruction is still badly needed in the newly self-sufficient families, even those in which someone has learned to prepare a suitable diet for a tuberculous patient, for this knowledge seems to have little effect upon the family dietary pattern.

DOWNES, J. Recent Changes in Income and Food Expenditures among Tuberculous Families in Harlem (and) A Study of Food Habits of Tuberculous Families in a Harlem Area of New York City. Milbank Quart. 21, 2:158 (Apr.), 1943.

Healthy Hearts Behave Variously—In normal young men pulse or blood pressure, at rest, is not indicative of ability to work. Estimates of capacity for hard muscular work should be based upon ability to do it, and speed of recovery of heart after the exercise.

BROUHA, L., and HEATH, C. W. Resting-Pulse and Blood-Pressure Values in Relation to Physical Fitness in Young Men. New Eng. J. Med. 228, 15: 473 (Apr. 15), 1943.

About Lead Poisoning—As these are the days of industrial hygiene's glory, it would seem that the attention of all health workers should be called to six important papers on the industrial health hazard of lead poisoning. Only the first is listed below, because of the limitations of space, not because it should be singled out for mention.

BUXELL, J. The Measurement of Industrial Lead Exposures in Air Analysis (and five papers on other aspects of lead poisoning). J. Indust. Hyg. & Toxicol. 25, 2:35 (Feb.), 1943.

Once Upon a Time—When we had nurses to spare, the ailing well-to-do's were coddled by the private duty nurse, and the ain't-got-nothing's called in the visiting nurse, but the in-betweens had less nursing service than high or low income groups. Somebody should have told Mrs. Middle Income that she too could have the services of the visiting nurse.

COLLINS, S. D. Variations in Nursing Service with Family Income and Size of City. Milbank Quart. 21, 2:188 (Apr.), 1943.

Coliform Test Gets Court K. O.—Maybe you had better study this report yourself, but it seems that occasional cases of typhoid fever undoubtedly are due to public water supplies which meet approved standards, and that a

factor of safety provided by millions of coliforms per each *Eberthella typhosa* might help to improve this situation.

KEHR, R. W., and BUTTERFIELD, C. T. Notes on the Relation between Coliforms and Enteric Pathogens. Pub. Health Rep. 58, 15:589 (Apr. 9), 1943.

What's Past Is Prologue—Here you will find an answer to the question "How well educated were the nurses of 1941?" In a nutshell, it is "Pretty well, I thank you."

LANDAN, H. Academic Qualifications of Registered Nurses as Revealed by the 1941 National Survey of Registered Nurses. Pub. Health Rep. 58, 12:465 (Mar. 19), 1943.

Tuberculosis in Teachers—In the city of Quebec and in the year 1940, and in a group of school teachers, 16 were found tuberculous; most were in an early stage of the disease and were unaware that they were a danger to the pupils. The following year a Provincial law was passed requiring x-raying of all teachers. This time 128 were found to have active tuberculosis of the lungs, 176 non-active, and 484 more needing observation.

LA BERGE, L. Detection of Tuberculosis in School Teachers in the Province of Quebec. Canad. Pub. Health J. 34, 3:121 (Mar.), 1943.

Cheerful Note—Excellent results were obtained in the sulfonamide treatment of gonococcal ophthalmia neonatorum—93.8 per cent recovering with normal eyesight. However, exacting pediatric and nursing care are matters still of great importance.

LEVIN, I. M., and BLATT, M. L. Gonorrheal Ophthalmia Neonatorum. Am. J. Nurs. 43, 4:351 (Apr.), 1943.

The "Must" of the Month—Very emphatically, you must read all the leading articles in the May 1 issue of the J.A.M.A. Eleven papers are too many to mention individually in this crowded bibliography, but a partial list of subjects—tropical diseases, epidemic influenza, malaria, nutritional diseases, trends in scientific research, health as a world problem, and inter-American coöperation—will indicate to you the necessity of reading them all, thoughtfully and immediately.

MACKIE, T. T., *et al.* Papers Read before the National Conference on Planning for War and Post-War Medical Services. J.A.M.A. 122, 1:1 (May 1), 1943.

As Others See Us—Praise-Singing Department—An English visitor charitably tells all that he found good in our courses in public health—both in undergraduate and in graduate medical schools—and concludes that the British educational practice may have something to learn from us.

MACKINTOSH, J. M. The Teaching of Preventive Medicine in the United States. Public Health. 56, 6:65 (Mar.), 1943.

"Boilermaker's Ear"—Plastic ear plugs molded to fit the individual's ear canal are suggested for workers in noisy industries. These plugs shut out the ear shattering, deafening, high-frequency noises, yet permit conversation.

MCCOY, D. A. The Prevention of Ear Disability in Industry. J.A.M.A. 121, 17:1330 (Apr. 24), 1943.

Glad Tidings for the Middle Aged—Hypertension is so common after 40 that a "moderate" degree can no longer be considered abnormal. Normal limits should be raised, concludes this paper.

MASTER, A. M., *et al.* Hypertension in People of Forty. J.A.M.A. 121, 16:1251 (Apr. 17), 1943.

"Them as Has, Gets"—There were fewer physicians per capita and a greater proportion of old-timers in poorer than in wealthy counties, and as might be expected, the rich counties are getting richer in young physicians and the poor, even poorer in all kinds.

MOUNTIN, J. W., *et al.* Location and Movement of Physicians, 1923 and 1938—Age Distribution in Relation to County Characteristics. Pub. Health Rep. 58, 12:483 (Mar. 19), 1943.

S. D. R. I. P.—Do you remember recent newspaper accounts of the "cure of cancer with egg white"? Well, here is a report that the treatment was without effect upon two dissimilar cancer cases for which it was tried. This paper seems to indicate that what is needed these days is a S.D.R.I.P. (Society for the Discouragement of Rushing into Print).

RHOADS, C. P., and ABELS, J. C. The Administration of Egg White and Avidin Concentrates to Patients with Cancer. J.A.M.A. 121, 16:1261 (Apr. 17), 1943.

BOOKS RECEIVED

MIRACLES OF MILITARY MEDICINE. By Albert Q. Maisel. New York: Duell, Sloan & Pearce, 1943. 373 pp. Price, $2.75.

VICTORIES OF ARMY MEDICINE. By Edgar Erskine Hume. Philadelphia: Lippincott, 1943. 250 pp. Price, $3.00.

CLINICAL SIGNIFICANCE OF THE BLOOD IN TUBERCULOSIS. By Gulli Lindh Muller. New York: Commonwealth, 1943. 516 pp. Price, $3.50.

A MANUAL OF PULMONARY TUBERCULOSIS (PART I) AND AN ATLAS OF THORACIC ROENTGENOLOGY (PART II). By David O. N. Lindberg. Springfield: Thomas, 1943. 231 pp. Price, $6.50.

THE KENNY CONCEPT OF INFANTILE PARALYSIS AND ITS TREATMENT. By John F. Pohl in Collaboration with Sister Elizabeth Kenny. Minneapolis: Bruce, 1943. 366 pp. Price, $5.00.

PUBLIC HEALTH AND PREVENTIVE MEDICINE. By Morton C. Kahn. New York: Oxford, 1942. 2 Vols. $4.00.

THE CANADIAN BORN IN THE UNITED STATES. By Leon E. Truesdell. New Haven: Yale, 1943. 263 pp. Price, $3.00.

ESSENTIALS OF INDUSTRIAL HEALTH. By C. O. Sappington. Philadelphia: Lippincott, 1943. 626 pp. Price, $6.50.

FOOD FOR PEOPLE. By Margaret G. Reid. New York: Wiley, 1943. 653 pp. Price, $4.00.

AN INTRODUCTION TO GROUP THERAPY. By S. R. Slavson. New York: Commonwealth, 1943. 352 pp. Price, $2.00.

DISCOVERING OURSELVES. By Edward A. Strecker and Kenneth E. Appel. 2d Ed. New York: Macmillan, 1943. 434 pp. Price, $3.00.

A FAMILY OF THIRTY MILLION. The Story of the Metropolitan Life Insurance Company. By Louis I. Dublin. New York: Metropolitan Life Insurance Co., 1943. 496 pp.

BROWNELL AND WILLIAMS. Health of our Nation Series. 1943.

Elementary Books:

Book V. Hale and Hearty	$0.96
Book VI. Active and Alert	.96
Book VII. Living and Doing	1.00
Health Problems—How to Solve Them	1.50
Youth Faces Maturity	.20

New York: American Book Company.

A STUDY IN PUBLIC RELATIONS. By Harold P. Levy. New York: Russell Sage, 1943. 165 pp. Price, $1.00.

SOCIAL HYGIENE YEAR BOOK 1942. The Program in Action in the States and Communities. New York: American Social Hygiene Association, 1943. 241 pp. Price, $1.00.

GUIDE TO THE INTER-AMERICAN CULTURAL PROGRAMS OF NON-GOVERNMENT AGENCIES IN THE UNITED STATES. Washington, D. C.: The Office of the Coordinator of Inter-American Affairs.

SIXTY-SECOND ANNUAL REPORT OF THE DEPARTMENT OF HEALTH FOR THE YEAR ENDING DECEMBER 31, 1941. Vol. I. Albany: Edward S. Godfrey, Jr., M.D., Commissioner.

CAREERS IN PUBLIC HEALTH. By Adrian G. Gould. Chicago: Research Associates, 1943. 48 pp. Price, $0.60.

ASSOCIATION NEWS

THREE-DAY WARTIME PUBLIC HEALTH CONFERENCE AND
SEVENTY-SECOND ANNUAL BUSINESS MEETING
AMERICAN PUBLIC HEALTH ASSOCIATION
New York, N. Y., October 12, 13, 14, 1943

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Dr. Fidel Alonso-Cainas, P. O. Box 415, Barceloneta, Puerto Rico, Director, Municipal Hospital and Clinic Physician.

Rene F. Bruneau, M.D., D.P.H., Shefford Co. Health Unit, Granby, Quebec, Canada, Medical Officer.

Oscar W. Davison, M.D., 417–19 Huron Bldg., Kansas City, Kans., Asst. Director of Health, City Health Dept.

George P. Gannon, M.D., 604 Glowood Drive, Pittsburgh, 10, Pa., Director, Pittsburgh Syphilis Control Program.

Francis A. Glass, M.D., 12 Main St., Haverstraw, N. Y., Health Officer, West Haverstraw.

James F. Hawkins, D.D.S., M.P.H., 8026 Sangamon St., Chicago, Ill., Dental Health Officer, Cook County.

Donald J. Hunt, M.D., 1146 Flood Bldg., San Francisco, Calif., District Medical Director, U. S. Indian Service.

George James, M.D., Obion County Health Dept., Union City, Tenn., Director, Obion-Lake Health Dist.

George M. Jewell, M.D., 1455 Cypress, Paris, Ky., Director, Bourbon County Health Dept.

Nathaniel Jones, M.D., 700 W 10th St., Jacksonville, Fla., Director, City-County Venereal Disease Clinic, P.A.Surgeon(R) U.S.P.H.S.

Raymond M. Lauer, M.D., 525 W. Market St., York, Pa., Director of Public Health, Dept. of Public Safety.

Heinz W. Markwald, M.D, Steele Road, New Hartford, Conn., Health Officer.

Abraham Pressman, M.D., Colorado River Relocation Project, Poston, Ariz., Director of Health and Sanitation.

Robert S. Quinn, M.D., 816 Fourth St., Santa Rosa, Calif., Asst. Health Officer, Sonoma County.

Camerino Rodriguez-Lopez, M.D., C.P.H., Centro de Higiene, Taxco, Guerrero, Mexico, Medical Officer of Health.

Martin H. Seifert, M.D., 1159 Wilmette Ave., Wilmette, Ill., Commissioner of Public Health.

Mark T. Sheehan, M.D., 245 Center St., Wallingford, Conn., Health Officer.

Joseph J. Smith, M.D., 1280 Stratfield Road, Bridgeport, Conn., Health Officer, Town of Easton.

Reuben Thalberg, M.D., 32 N. Main, Southington, Conn., Health Officer.

Laboratory Section

Gladys E. Duffy, M.A., Jeffery Hale's Hospital, Quebec, P. Q., Canada, Technician.

Elizabeth A. Garrison, 215 E. 12th St., Marysville, Calif., Laboratory Technician, Sutter-Yuba Bi-County Health Unit.

Faith F. Gaston, M.S., Health Dept., Court House, Kelso, Wash., Senior Bacteriologist.

Nancy K. V. Green, M.S., State Hygienic Laboratory, Jackson, Miss., Bacteriologist.

Thomas G. Maynard, State Dept. of Public Health, Springfield, Ill., Asst. Milk Sanitarian.

Lieut. Thomas W. Mou, M.A.C., Base Hospital, Army Air Base, Alliance, Nebr., Laboratory Officer.

Vital Statistics Section

Paul W. Shipley, New Orleans, La., Assoc., Public Health Representative, U.S.P.H.S., and Chief, Tabulation Section, State Dept. of Health.

Engineering Section

Cleon C. Bullock, 144 Wilbur St., Mesa, Ariz., Sanitary Officer, Mesa Health Dept.

R. C. Burkhardt, Mims Court, Huntsville, Ala., Senior Sanitarian, State Health Dept.

Duard F. Campbell, Dept. of Public Health, Boise, Ida., Milk Sanitarian.

Walter M. Culley, C.E., Surgeons Office, Second Service Command, Governors Island, N. Y., Sanitary Engineer.

Theodore C. Hill, C.E., 144 East Main St., North East, Pa., Design Engineer, Gannett, Eastman & Fleming.

Prof. Edward J. Kilcawley, M.C.E., Rensselaer Polytechnic Institute, Dept. of Civil Engineering, Troy, N. Y., Professor of Soil Mechanics and Sanitary Engineering.

Howard McGuire, 509 W. Clark St., Champaign, Ill., Sanitarian, State Dept. of Public Health.

Alfred H. Paessler, M.S., 4300 Avenue D., Austin, Tex., Acting Supt. of Water and Sewage Treatment Plants.

Joseph Allen Radbury, 1432 E. McKinley, Phoenix, Ariz., Sanitary Food Inspector, City Health Dept.

Roy Edwin Ramseier, C.P.H., 852 S. 19th East, Salt Lake City, Utah, Senior Sanitary Engineer, Pacific Division, U. S. Eng. Dept.

Perry C. Sharp, 852 U. S. Custom House, Chicago, Ill., Asst. Sanitary Engineer (R) U.S.P.H.S.

C. H. Watson, Bannock County Health Unit, Pocatello, Ida., Sanitarian.

Industrial Hygiene Section

Capt. Thomas F. Feltz, M.C., Desert Chemical Warfare Depot, Tooele, Utah, Director of Industrial Hygiene and Post Surgeon.

Edwin C. Hyatt, 1902 N. Circle Drive, Jefferson City, Mo., Industrial Hygiene Engineer, State Board of Health.

Melville H. Manson, M.D., 140 West St., New York, N. Y., Medical Director, New York Telephone Co.

Margaret J. Nicols, M.A., Div. of Industrial Hygiene, State Dept. of Labor, Syracuse Univ., Syracuse, N. Y., Assoc. Public Health Nursing Consultant, U.S.P.H.S.

Hugh L. Parker, M.S., 143 Lyle St., College Park, Ga., Industrial Hygiene Chemist, Industrial Hygiene Service, State Health Dept.

Capt. John J. Ritter, M.A.C., APO 837, c/o Postmaster, New Orleans, La., Venereal Disease Control, U. S. Army.

Bonnie J. Sewell, R.N., 1050 Gaviota St., Long Beach, Calif., Student.

Food and Nutrition Section

Dr. Oswaldo Lopes da Costa, National Dept. of Health, Praca Mal Ancora, Rio de Janeiro, Brazil, S. A., Chief, Section on Nutrition.

Earl A. Louder, Ph.D., Pet Milk Co., Greenville, Ill., Technical Director.

Mabel Perry Polan, M.S., State Health Dept., Austin, Tex., Senior Nutritionist.

Harold R. Sandstead, M.D., 15 Pine St., Sub-Treasury Bldg., New York, N. Y., P.A. Surgeon, U.S.P.H.S.

Paul F. Sharp, Ph.D., 425 Battery, San Francisco, Calif., Director of Research, Golden State Co., Ltd.

John M. Sherbeck, Health Dept., City Hall, Bay City, Mich., Sanitarian.

Ansta Todd, M.S., Capitol Annex Bldg., Phoenix, Ariz., Nutrition Consultant, State Dept. of Health.

Eleanor M. Wilkinson, M.S., State Board of Health, State House, Dover, Dela., Nutritionist.

Maternal and Child Health Section

Wesley N. Segre, M.D., Flint-Goodridge Hospital, New Orleans, La., Obstetrician, School of Nurse-Midwifery.

Mary E. Soules, M.D., M.P.H., 504 3rd St., Bismarck, N. D., Asst. Director, Maternal and Child Health, State Dept. of Health.

Public Health Education Section

Lillian C. Christensen, M.Ed., 133 Dorchester St., South Boston, Mass., Health Educator, Boston Health Dept.

Armand J. Courchaine, R.N., 4516 Baltimore Ave., Philadelphia, Pa., Science Instructor, Hahnemann Hospital School of Nursing.

Alma B. Fringer, 216 Rockford News Tower, Rockford, Ill., Exec. Secy., Winnebago County Tuberculosis Assn.

Alice M. Heath, 1018 N. Jefferson St., Milwaukee, Wis., Health Education Consultant, Wisconsin Anti-Tuberculosis Assn.

Ellen Kuhlmann, Box 544, Sharon, Pa., Exec. Secy., Mercer County Tuberculosis and Public Health Society.

Helen P. Olmstead, R.N., C.P.H., Room 401, P. O. Bldg., Oklahoma City, Okla., Field Nurse Supervisor, U. S. Indian Service.

Russell E. Shrader, M.A., 812 Littlefield Bldg., Austin, Tex., Merit System Supervisor, State Dept. of Health.

Taylor Smith, M.D., 35790 Detroit Rd., Avon, Ohio, Member, Lorain County Health Committee.

Ella T. Whitten, R.N., City Health Dept., 9

Ontario St., Toledo, Ohio, Supervisor of School Nursing.

Public Health Nursing Section

Mabel F. Chrystie, R.N., 519 Smithfield St., Pittsburgh, Pa., Asst. Director, Public Health Nursing Assn.

Gertrude M. Clouse, R.N., State Board of Health, Fond du Lac, Wis., State Advisory Nurse.

Evelyn A. Conner, R.N., 302 N. Madison St., Quitman, Ga., Brooks County Health Nurse.

Mary McR. Corpening, R.N., 206 S. John St., Goldsboro, N.C., Supervising Nurse, Wayne County Health Dept.

Neoma S. Crynock, R.N., 436 Stewart St., Morgantown, W. Va., Industrial Nurse, Koppers Coal Co.

Avis J. Dykstra, R.N., Martha Cook Bldg., Ann Arbor, Mich., Student, Univ. of Michigan.

Edith J. Eyster, R.N., 808 N. Spring St., Los Angeles, Calif., Supervising Public Health Nurse, Los Angeles County Health Dept.

Florence Cox Goodwin, R.N., 1304 Main St., Clarkdale, Ariz., Public School Nurse.

Helen L. Hendricks, R.N., Tishoming County Health Dept., Iuka, Miss., Staff Nurse.

Geraldine Hiller, M.A., Johnson Road, Falmouth Foreside, Me., Supervisor, Div. of Nursing, State Bureau of Health.

Pearl S. Kirkpatrick, R.N., Nevada St., Gooding, Ida., Gooding County Public Health Nurse.

Claudia M. D. Mangham, 419 E. 48th Place, Chicago, Ill., Public Health Field Nurse, Cook County Public Health Unit.

Vera E. Roswell, 110½ W. Oak St., Sparta, Wis., Advisory Public Health Nurse, State Board of Health.

Mildred B. Saunders, 816 Montrose Drive, South Charleston, W. Va., Industrial Nurse, Westvaco Chlorine Products Corp.

Leta Seaman, 1145–66th St., Des Moines, Ia., Consultant Nurse, State Dept. of Health.

Florence M. Watson, 11 Philadelphia Ave., Takoma Park, D. C., Staff Nurse, Instructive Visiting Nurse Society.

Helen L. Woodworth, 1337 Linda Vista Ave., Pasadena, Calif., Director of Nursing Service, Pasadena Visiting Nurse Assn.

Epidemiology Section

LeRoy D. Fothergill, M.D., U. S. Naval Medical Center, Bethesda, Md., Head, Dept. of Epidemiology.

Gerald F. Gagnon, 414 Walnut, Buena Park, Calif., Qualified Asst., Epidemiology-Sanitation, U. S. Navy.

Luis De J. Lozano-Mendoza, Calle Sta. Maria la Ribera 1-A, Mexico City, Mexico, Supervisor, Public Health Dept., Zone VIII (States of Michoacan and Guerrero).

Unaffiliated

Ernest G. Lion, M.D., 33 Hunt St., San Francisco, Calif., Director, Psychiatric Service, City-County Health Dept.

Philip Lomas, 122 W. 69th St., Los Angeles, Calif., Meat Inspector, City Health Dept.

Russel G. Means, M.D., 40 S. 3rd St., Columbus, Ohio, Member, Ohio Public Health Council.

Lawrence E. Shulman, 290 Congress Ave., New Haven, Conn., Research Assoc., Laboratory of Hygiene, John B. Pierce Foundation.

Richard M. Starr, M.D., 45 Huntington St., New London, Conn., Health Officer, Town of Waterford.

A. C. Woofter, M.D., State Dept. of Health, Des Moines, Ia., Acting Director, Division of Venereal Disease Control, State Dept. of Health, P.A.Surgeon, U.S.P.H.S.

DECEASED MEMBERS

A. Grant Fleming, M.D., D.P.H., McGill University, Montreal, Canada. Elected Member 1920, Elected Fellow 1930, Elected Life Member 1934, Epidemiology Section.

Paul D. Robason, M.D., McKinney, Tex. Elected Member 1942, Health Officers Section.

SCHOOL HEALTH SECTION WORKSHOPS

Establishment of a new Section on School Health by action of the Governing Council has already been announced. The officers of the Section, Leona Baumgartner, M.D., *Chairman,* and George M. Wheatley, M.D., *Secretary,* hope to have as an essential feature of the Section's activities workshops which will deal with fundamental "grass roots" problems of school health. They invite members of the Association to contribute suggestions for the future work of the Section and for specific problems in which they would be willing to contribute materials and work actively. Send suggestions directly to Leona Baumgartner, M.D., Department of Health, 125 Worth Street, New York, N. Y.

EMPLOYMENT SERVICE

The Association Employment Service seeks to bring to the attention of appointing officers the names of qualified public health personnel and to act as a clearinghouse on employment. This is a service of the Association conducted without expense to the employer or employee.

From the registry of persons available, selected announcements are published from time to time. Appointing officers may obtain lists of all registrants on request.

Address all correspondence to the Employment Service, American Public Health Association, 1790 Broadway, New York, N. Y.

POSITIONS AVAILABLE

Southern state department of health seeks several obstetric and pediatric consultants, requiring a minimum of a year's residency in a specialty, immunity to draft and preferably training in public health. Men and women are eligible. Salary $300 per month plus travel. Apply Box C, Employment Service, A.P.H.A.

MEDICAL OFFICERS NEEDED—TENNESSEE VALLEY AUTHORITY

The Tennessee Valley Authority is in urgent need of medical officers who are not eligible for military service and who are willing to accept assignments to war industrial activities (construction, manufacture of war chemicals and manufacture of hydroelectric power) as their participation in the all out war effort. Responsibilities include physical examinations, industrial hygiene, care of injuries, medical care to families in remote construction areas and general public health responsibilities in construction camps and villages.

Salary ranges from $3,200 to $4,200 per annum with opportunity for promotion.

For further information write to Dr. E. L. Bishop, Director of Health, Tennessee Valley Authority, Chattanooga, Tenn., or to the Personnel Department, Tennessee Valley Authority, Knoxville, Tenn.

CAREER OPPORTUNITIES IN PENNSYLVANIA

Charles B. Frasher, Merit System Supervisor, Pennsylvania State Department of Health, 207 Blackstone Building, Harrisburg, announces that appointments will soon be made in the following branches of the State Health Department of Pennsylvania: Health Conservation, Tuberculosis Control, Venereal Disease Control, Pneumonia Control, Industrial Hygiene, Narcotic Drug Control, Environmental Hygiene, Public Health Laboratories, Maternal and Child Health Services, Crippled Children's Services, School Medical Inspection, Dental, Nutrition, Milk Sanitation, Public Health Education, Sanitary Engineering, Vital Statistics, Public Health Nursing, Accounts, Biologicals and Supplies, Merit System, Tuberculosis Sanatoria. Open competitive examinations will be held and the resulting lists are expected to be in existence for 2 years or longer. Residence requirements are waived for professional positions.

INDUSTRIAL HYGIENISTS

The Research Section of the Division of Industrial Hygiene, National Institute of Health, Bethesda, Md., needs chemists, physicists, and medical technicians, as well as laboratory assistants in these fields. There is also opportunity for persons without college education, specific training or experience who are interested in such positions. Women now form one-third of the employees in the Research Section.

Wanted: School Dental Supervisor to administer and operate dental program in City schools and clinics in City of 50,000 population. Salary $3,000 to $3,600 with travel allowance. Those interested should address Dr. W. A. Browne, City Health Department, Alexandria, Va.

The Milwaukee City Service Commission announces an examination for assistant chief in charge of sanitary inspection. Salary first year $210 per month increasing by $10 increments annually until a maximum of $260 per month is reached. Applicants must be citizens of the United States, between 25 and 45 years of age. Those interested may communicate with the Milwaukee City Service Commission, Room 716, City Hall, Milwaukee, Wis.

Sanitarian wanted in county of 28,000 in Midwest. Salary $1,800 plus $500 travel. Must own car. Complete supervision and execution of sanitation program, including milk, water, food-handling, etc., and general sanitation of environment in county. Address Box I, Employment Service, A.P.H.A.

Merit System for Personnel Administration, Delaware, is accepting applications for position of Deputy State Health Officer in Delaware State Board of Health.

Salary range $3,600 to $4,200. Applications accepted until further notice. Those interested should communicate with Merit System Supervisor, P. O. Box 1911, Wilmington, Delaware, or State Board of Health, Dover, Del.

THE MERIT SYSTEM COUNCIL OF WEST VIRGINIA ANNOUNCES UNASSEMBLED EXAMINATIONS FOR THE FOLLOWING POSITIONS IN THE WEST VIRGINIA STATE HEALTH DEPARTMENT

Position	*Salary*
Director of Maternal and Child Hygiene	$4,200–$4,800
Assistant Director, Maternal and Child Hygiene	3,840– 4,500
Director, Industrial Hygiene	4,200– 4,800
Director, Vital Statistics	4,200– 4,800
Director, Communicable Diseases	4,200– 4,800
Assistant Director of Communicable Diseases (Tuberculosis)	3,840– 4,500
Assistant Director of Communicable Diseases (Venereal Disease)	3,840– 4,500
Venereal Disease Consultant	3,840– 4,500
Director, Bureau of Dental Hygiene	3,840– 4,500
Director of County Health Work	4,200– 4,800
Senior Health Officer	3,840– 4,500
Junior Health Officer	3,360– 3,840
Health Officer Trainee	2,400
Assistant Director, Hygienic Laboratory	2,640– 3,240
Senior Bacteriologist	1,800– 2,400
Senior Serologist	1,800– 2,400
Consultant Nurse in Special Fields	2,400– 3,000
Public Health Nursing Supervisor (State level)	1,920– 2,400
Public Health Nursing Supervisor (Local level)	1,800– 2,040
Chief of Medical Services	4,800– 5,280

Persons interested should make application to the Merit System Council, 212 Atlas Building, Charleston, W. Va.

Residence in West Virginia has been waived. Applications will be accepted continuously but new registers will be established from applicants who file no later than June 26, 1943.

Notice of an expected vacancy for an Industrial Hygiene Engineer in the Los Angeles County Health Department has been received. Those interested should communicate with Dr. H. O. Swartout, Acting County Health Officer, Los Angeles, Calif.

Announcement is made of the following examinations to be held by the State Personnel Board, Seattle, Wash., for positions in the State Department of Health and County Health Departments:

Position	*Salary Range* *Entrance*	*Maximum*
Bacteriologist	$135	$160
Laboratory Assistant	125	145
District Public Health Officer, II	325	425
Public Health Nurse	145	170
Asst. Venereal Disease Investigator	150	190
General Sanitarian	160	200
Milk Sanitarian	160	200
Chief of Public Health Education	275	335
Senior Milk Sanitarian	190	230
Obstetric Consultant	375	450
Pediatric Consultant	375	450
Senior Bacteriologist	160	200
Assistant Sanitarian (Open to Men and Women)	125	150

The New York State Department of Civil Service announces examinations for the following positions:

Resident Physician (T.B.) (No. 6051) Department of Public Welfare, Westchester County. Salary range $2,640–$3,000. Application fee $2.

Statistician (No. 6050) Department of Health, Westchester County. Salary range $2,700–$3,420. Application fee $2.

Public Health Nurse (No. 6052) Westchester County. Salary range $1,800–$2,160. Application fee $1.

Intermediate Medical Social Worker (No. 6053) Department of Public Welfare, Westchester County. Salary range $1,560–$1,920.

The examinations are open to both residents and non-residents of the State, but applicants must be citizens of the United States. Applications with required fees must be submitted to the New York State Department of Civil Service, Albany, by June 15. In writing for application forms candidates should specify by number and title the position for which they wish to be examined.

Wanted: Bacteriologist-Biologist. Ph.D. or equivalent. For research in chemotherapy and allied fields with pharmaceutical manufacturing company. New York area. Box L, Employment Service, A.P.H.A.

Assistant Vital Statistician wanted by outstanding private health agency, New York City. Salary $3,000 per annum. Apply stating education, special training and practical experience. **Box N**, Employment Service, A.P.H.A.

Sanitarian wanted: Starting salary $1,800 per year with travel allowance of $50 per month. Man must have own car. Bachelor's degree followed by at least one year's course or its equivalent in subjects necessary for one entering the public health field, or an engineering degree plus one year's experience in sanitary or public health engineering required. A course in public health training may be considered as an equivalent for a part of the experience requirement. Apply Dist. Dept. of Health No. 6, Central Office, Newberry, Mich., Dr. Franklin.

Wanted: Two physicians, immediate appointment, full-time venereal disease clinician, conduct several small clinics rotating schedule. Experience preferred. Salary $3,600 plus actual expense not to exceed $1,200. Write State Health Department, Santa Fe, New Mexico.

FOR OTHER POSITIONS AVAILABLE WRITE EMPLOYMENT SERVICE, AMERICAN PUBLIC HEALTH ASSOCIATION, 1790 BROADWAY, NEW YORK, N. Y.

In view of the current active demand for trained and experienced persons in public health it is suggested that prospective employers communicate directly with the Employment Service, American Public Health Association, 1790 Broadway, New York, N. Y., for up-to-date lists of applicants.

POSITIONS WANTED

Physician, age 36, M.D. Iowa, Dr.P.H. Harvard, specializing in tuberculosis, seeks position as medical director of a sanatorium or a state bureau of tuberculosis. Exempt from military service. **A-476**

Physician, M.D. Yale, with private practice industrial medicine. Age 39 and draft exempt. Seeks opportunity as public health physician. **A-505**

Physician, M.D. University of Arkansas, M.P.H. Harvard, experienced as county health officer. Age 35. Will consider position as city or county health officer or director of a bureau. **A-506**

Bacteriologist, 28, Iowa State College, draft immune, 3 years' experience public health laboratory. Experience in investigation and control activities on water, sewage and sanitation, as chemist and bacteriologist and serologist in syphilis and enteric diseases. **L-465**

M.D., Dr.P.H., now a practising physician, chief of a clinic, diplomate in his specialty, professor in a medical school, ineligible for military service but in good health, wishes to make a change in his work and be employed in war industry. **A-504**

NEWS FROM THE FIELD

State Health Officers
May, 1943

Alabama—†Burton F. Austin, M.D., State Health Officer, Montgomery
Arizona—†George F. Manning, M.D., State Superintendent of Public Health, Phoenix
Arkansas—*William B. Grayson, M.D., State Health Officer, Little Rock
California—*Wilton L. Halverson, M.D., Director of Public Health, Sacramento
Colorado—*Roy Leon Cleere, M.D., Secretary, State Board of Health, Denver
Connecticut—*Stanley Hart Osborn, M.D., State Commissioner of Health, Hartford
Delaware—*Edwin M. Cameron, M.D., Executive Secretary, State Board of Health, Dover
Florida—*Henry Hanson, M.D., State Health Officer, Jacksonville
Georgia—Thoms F. Abercrombie, M.D., State Commissioner of Health, Atlanta
Idaho—†Ernest L. Berry, M.D., Director of Public Health, Boise
Illinois—†Roland R. Cross, M.D., State Director of Health, Springfield
Indiana—†Thurman B. Rice, M.D., State Health Commissioner, Indianapolis
Iowa—*Walter L. Bierring, M.D., State Health Commissioner, Des Moines
Kansas—†Floyd C. Beelman, M.D., Secretary, State Board of Health, Topeka
Kentucky—*Arthur T. McCormack, M.D., State Health Commissioner, Louisville
Louisiana—David E. Brown, M.D., President, State Board of Health, New Orleans
Maine—†Roscoe L. Mitchell, M.D., Director, State Bureau of Health, Augusta
Maryland—*Robert Hickman Riley, M.D., State Director of Health, Baltimore
Massachusetts—†Vlado A. Getting, M.D., Dr.P.H., State Commissioner of Public Health, Boston
Michigan—†Henry A. Moyer, M.D., State Health Commissioner, Lansing
Minnesota—*Albert J. Chesley, M.D., Secretary, State Board of Health, St. Paul
Mississippi—*Felix J. Underwood, M.D., Executive Officer, State Board of Health, Jackson
Missouri—†James Stewart, M.D., State Health Commissioner, Jefferson City
Montana—*William F. Cogswell, M.D., Secretary, State Board of Health, Helena
Nebraska—†Claude A. Selby, M.D., State Director of Health, Lincoln
Nevada—Edward E. Hámer, M.D., Secretary, State Board of Health, Carson City
New Hampshire—†Alfred L. Frechette, M.D., Secretary, State Board of Health, Concord
New Jersey—†J. Lynn Mahaffey, M.D., State Director of Health, Trenton
New Mexico—*James Robt. Scott, M.D., State Director of Public Health, Santa Fe
New York—*Edward S. Godfrey, Jr., M.D., State Commissioner of Health, Albany
North Carolina—*Carl V. Reynolds, M.D., State Health Officer, Raleigh
North Dakota—†Frank J. Hill, M.D., State Health Officer, Bismarck
Ohio—*Roll Harrison Markwith, M.D., State Director of Health, Columbus
Oklahoma—†Grady Frederick Mathews, M.D., State Health Commissioner, Oklahoma City
Oregon—*Frederick D. Stricker, M.D., State Health Officer, Portland
Pennsylvania—†Alexander A. Stewart, M.D., Secretary of Health, State Department of Health, Harrisburg
Rhode Island—†Edward A. McLaughlin, M.D., State Director of Public Health, Providence
South Carolina—*James A. Hayne, M.D., State Health Officer, Columbia
South Dakota—†W. R. Giedt, M.D., M.P.H., Acting State Superintendent of Health, Pierre
Tennessee—*Wilson C. Williams, M.D., State Commissioner of Public Health, Nashville
Texas—†George Washington Cox, M.D., State Health Officer, Austin
Utah—†William M. McKay, M.D., State Health Commissioner, Salt Lake City
Vermont—Charles F. Dalton, M.D., Secretary, State Board of Health, Burlington
Virginia—*Irl Cophas Riggin, M.D., State Health Commissioner, Richmond
Washington—*Donald G. Evans, M.D., State Director of Health, Seattle
West Virginia—†Clifton F. McClintic, M.D., State Commissioner of Health, Charleston
Wisconsin—†Carl N. Neupert, M.D., State Health Officer, Madison
Wyoming—†Marshall C. Keith, M.D., State Health Officer, Cheyenne

* Fellow A.P.H.A.
† Member A.P.H.A.

AMERICAN SOCIAL HYGIENE ASSOCIATION NEW STAFF MEMBERS

*Raymond H. Greenman,** assigned as field consultant in one of the Army Service Commands. Mr. Greenman has been in public health work since 1919, serving 19 years as executive secretary of the Tuberculosis and Health Association of Rochester and Monroe County, N. Y., and for 10 years also as executive secretary of the Medical Society of the County of Monroe.

Wade T. Searles, assigned as field consultant in one of the Army Service Commands. Mr. Searles was formerly a senior adviser on war services for the Office of Civilian Defense and a member of the faculty of Indiana University, and has had wide experience in welfare and public health fields while employed by the unemployment and transient relief agencies in Dayton, Ohio; the Dayton Public Health Clinic; and the Indiana State Conference on Social Work.

Edna W. Fox, R.N., M.P.H., assigned as field consultant in one of the Army Service Commands. Since 1914 Mrs. Fox has been engaged in work with the Rockefeller Institute, the American Red Cross, the American Tientsin School in Tientsin, China, and assisting her husband, Brig. Gen. A. Fox, M.C., in editing and publishing articles on epidemiology and preventive medicine.

Charles E. Miner, assigned as field consultant in one of the Army Service Commands. Mr. Miner was in charge of the venereal disease control program in all extra-cantonment areas in five southeastern states in World War I and later served as executive officer of the Committee of Sixteen at Erie, Pa.; the Missouri Social Hygiene Association; and as General Director of the Committee of Fifteen at Chicago. More recently he has been State WPA Administrator for Illinois, Regional Director for 13 central states of the Post War Program for state and local works, and field representative for the Illinois Emergency Relief Commission.

Josephine D. Abbott, assigned as consultant to study delinquency problems. Mrs. Abbott comes to the association from the Division of Child Hygiene of the Massachusetts State Department of Health, where she was a consultant in parent education. As director of the Family Information Center at the Jordan Marsh Company in Boston; and as a clinical psychologist and educational lecturer; consultant in child management; Mrs. Abbott has special experience in the field of parent education, child psychology, and child guidance.

Thomas A. Larremore, assigned as legal consultant at American Social Hygiene Association headquarters. Mr. Larremore, a lawyer, served on the staff of the association from 1917 to 1920, and in the United States Army. He has been a member of the faculties of several law schools. He comes to the association again from private legal work.

Kenneth Miller,† assigned to a special education project is loaned to the association on a part-time basis by the Philadelphia Tuberculosis and Health Association, where he is director of the local educational and publicity program.

Shirley Greene,† assigned to work in the association's publication division was formerly with the Queensboro Tuberculosis and Health Association and the Newburgh Public Health and Tuberculosis Association. Mrs. Greene is a graduate of Hunter College and the Yale School of Public Health.

Isabel H. Collins, assigned to do educational work with Dr. Snow and Professor Bigelow. Mrs. Collins formerly was Assistant to the Secretary of the Social Hygiene Committee of the New York Tuberculosis and Health Association and comes to the association from Washington, D. C., where she worked as Health Education As-

sistant of the Social Hygiene Society of the District of Columbia.

UNIFORM DEFINITIONS OF MOTOR VEHICLE ACCIDENTS

The U. S. Department of Commerce has announced the publication of a pamphlet on Uniform Definitions of Motor Vehicle Accidents which was prepared under the supervision of Halbert M. Dunn, M.D., Chief Statistician for Vital Statistics of the Bureau of the Census, by Iwao M. Moriyama, Associate Biometrician. The Committee on Definitions of the National Conference on Uniform Traffic Accident Statistics included Dr. Dunn as Chairman, Dr. Earle G. Brown of Mineola, N. Y., Dr. E. R. Coffey, Assistant Surgeon General, U. S. Public Health Service, Dr. Edward S. Godfrey, Jr., New York State Commissioner of Health and Robert J. Vane of the Metropolitan Life Insurance Company representing the American Public Health Association, among others.

This report, which is available through the Bureau of the Census for distribution, has been approved by the American Public Health Association, the American Association of Motor Vehicle Administrators, the Conference of State and Provincial Health Authorities of North America, and the U. S. Public Health Service, among other agencies.

A STUDY OF MEDICINE AND THE CHANGING ORDER

The New York Academy of Medicine has announced the formation of a committee whose objectives will include being informed on the quality and direction of the economic and social changes that are taking place now and that are clearly forecast by the immediate future. The result will help to define how these changes are likely to help medicine in its various aspects and to determine how the best elements of the science of medicine and its service to the public may be preserved and embodied in whatever changed social order may ultimately develop.

The Chairman of the committee is Dr. Malcolm Goodridge and among members are the following with interests in public health: James Alexander Miller, M.D., Alan Gregg, M.D., George Baehr, M.D., I. Ogden Woodruff, M.D., Wilson G. Smillie, M.D., Jean Curran, M.D., and Iago Galdston, M.D., Secretary.

AWARD TO DR. FLORENCE SEIBERT

The American Association of University Women has announced the presentation in April of its first Achievement Award in the amount of $2,500 to Dr. Florence Seibert, Associate Professor of Biochemistry in the Phipps Institute, University of Pennsylvania. Dr. Seibert for years has been active in research relating to tuberculosis and in particular in the preparation of the purified protein derivatives.

THE BELA SCHICK LECTURES

The first Bela Schick lecture under a fund created in 1942 by the friends and associates of Dr. Bela Schick, New York, N. Y., was presented recently at Mt. Sinai Hospital, New York, by William E. Ladd, M.D., Professor of Child Surgery in the Harvard Medical School, Boston, on the subject of Time and Choice of Operation in Early Life.

NICHOLAS APPERT MEDAL AWARDED TO PROFESSOR S. C. PRESCOTT

The Chicago Section of the Institute of Food Technologists has announced that its Nicholas Appert Medal has been awarded to Professor Samuel Cate Prescott, Emeritus Dean of Science, Massachusetts Institute of Technology, Cambridge. The medal is to be presented on June 3 at the meeting of the Institute in St. Louis, Mo.

Since his retirement in June, 1942, as

Dean of Science at M.I.T., Professor Prescott has been called in to consulting service by the Dehydration Committee of the U. S. Department of Agriculture and by the Research Laboratories of the National Canners Association.

U. S. PUBLIC HEALTH SERVICE FEATURED IN RKO "THIS IS AMERICA" FILM

Dr. Carl E. Rice, currently in charge of the Community Medical and Dental Section of the U. S. Public Health Service at Bathesda, Md., is featured in RKO's "Medicine On Guard," which tells the story of the typical wartime community faced by urgent health problems arising from the shortage of doctors. Dr. Rice works in close coöperation with the Procurement and Assignment Service of the War Manpower Commission and, on request will arrange the relocation of a doctor from a less critical area. This latest "This Is America" two reel feature depicts the rising incidence of tuberculosis in a typical industrial community. Under the direction of Dr. Herman E. Hilleboe, this menace is being checked through the use of the mobile photofluorographic units which are set up in the factories themselves and take chest plates of the workers with a minimum of time loss and expense. The elaborate laboratories of the Division of Industrial Hygiene under the direction of Dr. James G. Townsend are shown determining the causes of occupational disabilities.

DR. WILINSKY RECEIVES BOSTON CITY CLUB MEDAL

Charles F. Wilinsky, M.D., Chief Medical Officer of the Boston Public Safety Committee, Director of Beth Israel Hospital, and Deputy Commissioner of Health of Boston, was recently awarded the medal of the Boston City Club for "most outstanding civic service to Greater Boston in 1942."

This medal is presented annually to the resident of Greater Boston not holding an elective position, who has performed in the opinion of the club the most meritorious service for the welfare of Bostonians. The selection of Dr. Wilinsky was the outcome of his work in organizing the medical section of the Boston civilian defense effort and for his work during the Cocoanut Grove disaster.

UNIVERSITY OF TEXAS RECEIVES GRANT FOR CHILD HEALTH

The William Buchanan Foundation of Texarkana has announced a grant to the University of Texas Medical School of $200,000 covering a 5 year program on child health. It is reported that the program will be worked out in conjunction with the Department of Pediatrics which will correlate the work of other state and national agencies. "Its purpose is to afford the profession in Texas an opportunity to maintain the latest methods in connection with the promotion of child health, especial attention to be given to the problems of the adolescent in wartime."

CHARLES F. BOLDUAN, M.D., RETIRES

The retirement of Charles F. Bolduan, M.D., as Director of the Bureau of Health Education in the New York City Department of Health, effective June 1, has been announced. On May 20 his friends and associates tendered to Dr. Bolduan a dinner in his honor in New York.

OCD PLAN FOR EMERGENCY MEDICAL SERVICE IN INDUSTRIAL PLANTS

Emergency Medical Service for Industrial Plants, a new bulletin issued by the Medical Division of the Office of Civilian Defense, advises every plant medical department to prepare a "disaster operations plan" to provide adequate medical service in case of a plant catastrophe involving large numbers of casualties.

The plan should provide for necessary first aid care at the site of the incident, for adequate ambulance service, and for hospitalization of the seriously injured, it is stated.

The bulletin discusses casualty stations, the importance of identification and records, transportation, the organization and operation of protective services in a community, and the overall protective services recommended for industrial plants. A bibliography of pertinent material is included.

SURGEON GENERAL'S ANNUAL REPORTS DISCONTINUED

Dr. E. R. Coffey, of the Division of Sanitary Reports and Statistics, U. S. Public Health Service, announces the decision of the Office of War Information to suspend publication of the *Annual Reports of the Surgeon General* for the duration of the war.

OFFICE OF COMMUNITY WAR SERVICES ESTABLISHED

By executive order of the President on April 30, the Office of Community War Services was established in the Federal Security Agency, eliminating the Office of Defense Health and Welfare Services. Federal Security Administrator Paul V. McNutt has announced that Charles P. Taft becomes Director of Community War Services in the new organization.

The Office of Community War Services, like its predecessor, is the federal agency concerned in health, medical care, welfare, recreation, education, and related services. It includes Divisions for Recreation, Social Protection, and Day Care for children of women in war work. It also serves as the center for coördinating health and welfare services available through federal and other public and private agencies which can help communities meet wartime needs in these fields; and offers states and localities the services of health and welfare specialists to assist in planning and developing their community programs.

The President's executive order also established a Committee on Physical Fitness in the Federal Security Agency. John B. Kelly is Chairman. The committee is charged with carrying on a nation-wide promotional program, in coöperation with national, state, and local organizations, and for providing advice and assistance to communities in developing and carrying out plans to promote the interest of individuals in improving their own physical condition.

NEW DUTIES FOR CIVILIAN PHYSICIANS ORGANIZED FOR CIVILIAN DEFENSE

Temporary assistance to the Army if it is unable to handle a sudden influx of war casualties or some other military emergency in War Department hospitals will be given by units of civilian physicians organized for Civilian Defense. "Affiliated hospital units" have already been organized by OCD and the U. S. Public Health Service in coastal areas, and will be expanded to include more than 200 hospitals throughout the country, at the request of the War Department. Each unit consists of 15 doctors normally associated with a single hospital, and the units will be used in military emergencies in or near the communities in which the staff resides.

Physicians accepted for service with the affiliated hospital units receive reserve commissions in the U. S. Public Health Service, but will be called to active duty by the Surgeon General only at the call of the OCD. When a unit is needed, either to staff an OCD emergency base hospital or to assist the Army temporarily in a military emergency, the physicians of the unit will be placed on active duty for the duration of that particular emergency, and receive the pay and allowance of medical officers of equivalent rank in the Army. They will return to inactive

status as soon as they can be replaced by Army medical officers.

Initially, only hospitals and medical schools in the areas considered in most immediate danger of enemy attack were invited to form these units, but to meet the Army's request for their availability in an unexpected emergency, such units will now be formed throughout the country.

Dr. George Baehr, Chief Medical Officer of the U. S. Office of Civilian Defense, reported that, by April 22, unit directors had been nominated by 152 of the hospitals and medical schools in coastal areas previously invited to form units, and that 104 of these had been commissioned.

MANHATTAN COLLEGE FOOD HANDLING COURSE

On June 7, a free course in sanitation problems in food handling and processing begins at the School of Engineering of Manhattan College, New York, N. Y. It will run for 6 weeks. The course is under the educational supervision of Dr. J. H. Shrader, and is conducted in coöperation with the Department of Health of the City of New York. Its purpose is to offer training in methods of food technology and sanitation as a means of increasing food production and preventing spoilage, contamination, and food poisoning. Persons who satisfactorily complete the course will be issued a Qualifying Certificate in Food Sanitation by the City Department of Health.

"FOR THIS WE FIGHT"

The Commission to Study the Organization of Peace and the Twentieth Century Fund announce a series of broadcasts entitled "For This We Fight" beginning Saturday, June 5, 7:00 to 7:30 P.M. and continuing for a period of 26 weeks. Secretary of State Cordell Hull will be the first speaker. American statesmen, businessmen, labor leaders, educators, scientists, and outstanding representatives in other fields will discuss crucial postwar problems over the National Broadcast Company network during the series. International aspects of the postwar world and the national postwar issues are the main themes. Business, labor, health, economic security, education, housing, public works and related questions will all be included in the discussion of postwar problems.

1943 AMENDMENTS TO THE PUBLIC HEALTH LAWS IN GEORGIA

Among the new statutes pertaining to public health in Georgia there are new laws and regulations governing shellfish sanitation, on simplified forms of birth certificates, on birth certificates for adopted children, the filing of delayed birth certificates, the provision of enlarged county boards of health, to require the examination of blood specimens from each pregnant woman, and to prevent the use of various premises for purposes of prostitution.

The Georgia State Board of Health recently has declared a quarantine on venereal diseases in Georgia and has promulgated rules for its enforcement. The official resolution declares that an epidemic of venereal diseases "of such proportions and widespread nature that it is a menace to the public health and safety" now exists in Georgia. The quarantine is imposed on persons with syphilis, gonorrhea, and chancroid, and on persons directly exposed to these diseases. Provisions are made for the establishment of isolation or detention hospitals for the detention and treatment of these persons.

RESOLUTION ON EMPLOYMENT OF WOMEN IN WARTIME

Frances Perkins, Secretary of Labor, Washington, recently called a Conference on the Employment of Women in Wartime which adopted resolutions

relative to standards and hours of employment. The conference endorsed state laws and regulations embracing the following basic principles, except where modification may be necessary during the war period to insure maximum production.

The conference urged that peacetime standards of hours and conditions of work in civilian industry be not relaxed in order to provide conveniences, goods, and services for war workers and civilians which in peacetime may be desirable but in time of war are not truly necessary to the national well-being. If relaxation of state labor laws should be necessary, it was urged that it should be granted only in those areas in which critical labor shortages exist and that it be permitted only for the production of goods and services necessary to provide for the basic minimum subsistence needs of war workers and the civilian population.

NEW STANDARDS

The American Standards Association announces that it has approved two new standards "Allowable Concentration of Chromic Acid and Chromates" and "Allowable Concentration of Mercury." These have been developed by the Subcommittee on Allowable Concentrations of Toxic Dusts and Gases—Z.37. The representative of the American Public Health Association on this Subcommittee is J. J. Bloomfield of the National Institute of Health. Copies of the standards may be obtained from the American Standards Association, 29 West 39 Street, New York, N. Y.

LIBRARIES AND THE WAR

"Information for Victory" is the theme of the short but important annual meeting of the Special Libraries Association which is to be held June 22–24 at the Hotel Pennsylvania, New York, N. Y. The slogan of the association has been "Putting Knowledge To Work." One important field of knowledge is public health. In the association, libraries dealing with this subject are found in the Biological Sciences Group. This group is holding special meetings at the convention and also joining other groups which cover social science, technology, finance, insurance, etc.

Marion Kappes, Librarian of The Children's Memorial Hospital, Chicago, is Chairman of the Biological Sciences Group.

PERSONALS

Central States

GAYLORD W. ANDERSON, M.D., DR. P.H.,* MAJOR M.C., U.S.A., has been appointed head of the Division of Medical Intelligence in the office of the Surgeon General, U. S. Army. This division compiles health and sanitation information from the areas to which United States troops may be sent. Dr. Anderson is head of the Division of Preventive Medicine and Public Health at the University of Minnesota Medical School, Minneapolis.

WILLARD H. DOW, of Midland, Mich., President of the Dow Chemical Company, has been awarded the Charles Frederick Chandler Medal by Columbia University for noted achievements in the field of chemistry. The medal was established in 1910 in honor of Professor Chandler, who was a Founder of the American Public Health Association.

MARSHALL S. MEYER, M.D.,† of Ashland, Wis., former Director of Sanitary District Number 9 in that city, has been named Director of District No. 6. He succeeds ALLAN A. FILEK, M.D.,† now Director of the Division of Local Health Service and Tuberculosis Control of the Wisconsin State Board of Health, Madison.

Eastern States

MURIEL F. BLISS, C.P.H.,* has joined the staff of the Connecticut State

Department of Health as Assistant in Health Education.

HOWARD FOX, M.D., has been appointed consultant in tropical medicine to the Secretary of War, in Washington, D. C.

THOMAS A. GONZALES, M.D., Chief Medical Examiner of the City of New York, has been made an honorary member of the Asociacion Medica Argentina.

Southern States

NORMAN H. BAKER, D.D.S., of Charleston, W. Va., has been reappointed as the dental member of the Public Health Council of West Virginia, for the term ending June 30, 1945.

ROBERT H. FISHBACH, Passed Assistant Surgeon, U. S. Public Health Service Reserve, formerly of Hawaii, has been appointed Director of the Lewis-Pacific Counties Public Health Department.

WILLIAM G. HANCOCK, M.D., of Rison, Ark., has been named Health Officer of Cleveland County.

R. W. HART,† P. A. Sanitary Engineer (R), has been transferred from the U. S. Public Health Service, District Office No. 4, New Orleans, La., to U. S. Public Health Service District Office No. 7, Kansas City, Mo., effective May 1, 1943.

GEORGE G. HOWARD, Passed Assistant Surgeon, U. S. Public Health Service Reserve, has been placed in charge of the Parker and Palo Pinto [Texas] County Health Unit.

THEODORE B. PARKER, Chief Engineer of the Tennessee Valley Authority, according to *Science*, has been appointed head of the Department of Civil and Sanitary Engineering in the Massachusetts Institute of Technology, Cambridge, Mass. He will succeed Professor Charles B. Breed, who asked to be relieved of administrative duties to devote full time to the professorship of civil engineering.

BRIGADIER GENERAL JAMES STEVENS SIMMONS,† A.U.S., Director of the Preventive Medicine Division, Office of the Surgeon General, U. S. Army, Washington, D. C., delivered the John Wyckoff lectures at New York University on April 15 and 16, 1943. The title of the first lecture was: "The Preventive Medicine Program of the United States Army"; the title of the second lecture was: "The Present State of the Army's Health."

L. F. THOMEN, DR.P.H.,† having finished his Doctorate in Public Health at the Johns Hopkins University School of Hygiene and Public Health, Baltimore, Md., is returning to his home in Santo Domingo, as of May 1. He will occupy his positions as Director of the Laboratories of the School of Medicine of the Universidad de Santo Domingo, and Director of the Division of Malaria Control of the Ministry of Health of the Dominican Republic. He may be addressed at: Arzobispo Nouel.

WILLIAM H. TOLAND, M.D., of Nashville, Ark., has been oppointed Health Officer for Howard County.

NOBLE A. UPCHURCH, M.D., who has been Health Officer of Jacksonville, Fla., since 1925, resigned January 1 on account of ill health. He has been succeeded by WIELAND W. ROGERS, M.D., who has been connected with the Department for about 14 years.

Western States

ELIZABETH GUNN MCCAIN, M.D., of Omak, Wash., has been appointed Health Officer of Okanogan County, to continue the unexpired term of GLENN E. STEVENS, M.D., of Okanogan, who has entered military service.

FRANK M. STEAD, Ph.D.,† formerly of the Los Angeles City Department of

* Fellow A.P.H.A.
† Member A.P.H.A.

Health, has been appointed Assistant Professor of Preventive Medicine at the University of Texas Medical Branch, Galveston.

HUBERT O. SWARTOUT, M.D., DR.P.H.,† Director of the Bureau of Preventable Disease in the Los Angeles County Health Department, has been appointed Acting Health Officer of the County.

Hawaii

MAJOR CHARLES L. WILBAR, JR., M.C., U. S. Army, has been appointed Health Officer of Maui County with headquarters in Wailuku.

WILLIAM L. ZINK, Assistant Surgeon, U. S. Public Health Service Reserve, has been assigned to operate the new mobile x-ray unit of the Territory of Hawaii Health Board.

CONFERENCES AND DATES

American Home Economics Association—Wartime Institute with 225 delegates representing all state associations. University of Maryland, Baltimore, Md. June 18–21.

American Public Health Association—Wartime Public Health Conference and 72nd Annual Business Meeting. New York, N. Y. October 12–14.

American Society of Clinical Pathologists. Chicago, Ill. June 4–6.

American Society of Heating and Ventilating Engineers—Semi-annual meeting. William Penn Hotel, Pittsburgh, Pa. June 6–8.

American Water Works Association—
Conference on War Winning Water Works Operations. Carter and Statler Hotels (co-headquarters), Cleveland, Ohio. June 15–18.
Rocky Mountain Section—Denver, Colo. September 16–17.
Western Pennsylvania Section—Roosevelt Hotel, Pittsburgh, Pa. September 22–23.
Southwest Section—Hotel Biltmore, Oklahoma City, Okla. October 11–13.
California Section—Biltmore Hotel, Los Angeles, Calif. October 27–29.

Civil Service Assembly—
Western Regional Conference. Yosemite National Park, Mariposa, Calif. June 5–6.

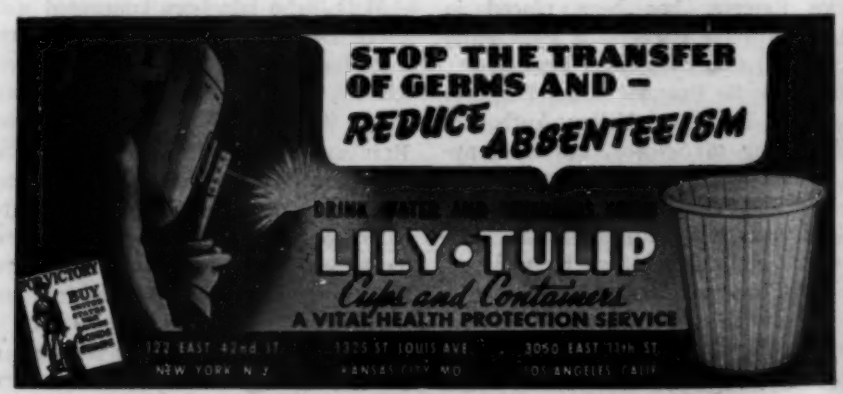
Idaho Public Health Association. Boise, Idaho. June 3–4.

Institute of Food Technologists—Wartime Conference on Food. St. Louis, Mo., June 2–4.

New York State Association of Public Health Laboratories—Annual Meeting. The State Laboratory, Albany, N. Y. June 25.

Pennsylvania Sewage Works Association—in collaboration with Pennsylvania Water Works Operators' Association. Wartime Conference. Penn Harris Hotel, Harrisburg, Pa. June 8–9.

Special Libraries Association. New York, N. Y. June 22–24.

State Nursing Councils for War Service—Meeting of Secretaries. Medinah Club, Chicago, Ill. June 17–18.

Washington Public Health Association. Seattle, Wash. May 31–June 1.